

# THE MEDICAL TIMES.

TUESDAY, NOVEMBER 15, 1870.

## ORIGINAL LECTURES.

### CLINICAL LECTURES

ON THE TREATMENT OF STRANGULATED HERNIA.

BY S. D. GROSS, M.D., LL.D.,

Professor of Surgery in the Jefferson Medical College of Philadelphia.

No. II.

IN the preceding lecture I spoke of the treatment of acute strangulation, pointing out the importance of prompt and decisive action. My object, this morning, will be to call attention to another form of the affection, and also to the use of the knife in the event of the failure of the taxis or of its inapplicability.

When strangulation takes place slowly, or when it is, so to speak, chronic, the case generally admits of much greater delay, as well as much greater liberty in the manipulations necessary to effect reduction. In such a condition, a number of hours—twelve, twenty-four, or even thirty-six—often elapse before the supervision of severe or alarming symptoms. The patient, perhaps long accustomed to his rupture, is conscious of his inability to replace it, but, having, it may be, repeatedly been in an apparently similar condition, gives himself no special concern upon the subject. Meanwhile the strangulation continues; slowly, but steadily, the tumor augments in bulk and tension; tenderness gradually arises; the abdomen becomes sore; the bowels are constipated; occasional nausea is experienced; and, finally, vomiting ensues, followed, after no long interval, by the ejection of stercoraceous matter. The nature of the disease, hitherto obscure, has now fully declared itself. The symptoms are no longer equivocal. Life is in danger; although the danger is not so pressing as in acute, rapid, or sudden strangulation. There is still time for the taxis, and the efforts, if judiciously and perseveringly made, will be likely to be successful. The hernial contents are constricted, but hardly so tightly as in acute strangulation; the tumor is tense and firm, but the opening of communication is large, and pressure, steadily and systematically exerted, readily displaces some of its contents. First one portion is emptied, then another, and another, until the whole of the swelling is gone. The operation has been a comparatively easy one. Of course, there are exceptions to the rule. I have often, under such circumstances, effected reduction in a few minutes,—sometimes, indeed, in a few seconds. But a surgeon is not always thus fortunate. The case is sometimes stubborn, requiring coaxing, patience, and perseverance; and, in this way, I have sometimes spent from ten to fifteen minutes without any detriment to part or system. If the symptoms are not urgent, if the stomach be comparatively quiet, if there be no special restlessness, hiccup, or shrinking of the features, if the tumor be not particularly tender, or evincive of the existence of inflammation, further delay will be advisable, and the taxis may be again tried, the system, in the mean time, having had the benefit of a full dose of morphia and chloral. It is astonishing how tolerant of delay, and even of rude manipulation, many of these cases of so-called chronic strangulation are. Nevertheless, there is a point here, as in the acute form of the affection, when further delay becomes improper, and instrumental interference is imperatively called for. A decided aggravation of the symptoms just enumerated unmistakably indicates that the time for the suspension of the taxis has arrived, and that life can be saved only by the

prompt division of the stricture. It may be assumed—judging from my own experience—as a general principle that the facility of reduction in gradual or chronic strangulation is in proportion to the volume of the tumor, supposing that it is free from complications, particularly from adhesions and enlargement from interstitial deposits of the protruded structures. Great size always denotes the existence of a large opening of communication between the hernia and the general peritoneal cavity; and, as has already been stated, such an opening is uniformly conducive to facility of restoration, by admitting of the easy clearance of the contents of the bowel.

The symptoms of strangulation usually disappear immediately after the reduction has been effected, or, at all events, within a very short period. Sometimes, however, a certain degree of nausea continues, and occasionally there is even some vomiting. Such symptoms are most liable to ensue in cases attended with extraordinary gastric derangement, and they generally yield promptly to the effervescent draught, a full dose of chloral, or the hypodermic injection of one-fourth of a grain of morphia. When they obstinately persist, apprehension may justly be excited that the strangulation has not been completely relieved, but that the parts are still more or less constricted. The cause of the obstruction, which should at once be sought out, may exist either in the sac itself or in the wall of the abdomen, the bowel, it may be, having been pushed, during the manipulations, underneath the peritoneum or between this membrane and the transverse muscle. However this may be, an effort should at once be made to reproduce the hernia, an object which is best attained by making the patient cough and strain in the erect or semi-erect posture. If the effort fails, the only thing that remains to be done is to cut down upon the parts and relieve the stricture with the knife. Such an occurrence, however, is uncommon, and will not be likely to arise unless undue force has been used in the employment of the taxis.

Although there are, in my opinion, few cases of strangulated hernia in which the timely and judicious employment of the taxis will fail to effect reduction, it is impossible to dispense with the use of the knife altogether. The cases demanding instrumental interference are: 1. those in which there has been a failure of the taxis and its auxiliaries; and 2. those in which the parts, from neglect and from the severity of the constriction, are so much inflamed as to render the employment of pressure, however slight, utterly intolerable. It not unfrequently happens, not only in hospital but also in private practice, that the proper time for the taxis has passed. The professional attendant has mistaken the nature of the affection, or the patient, although informed of his danger, has made light of the case, having perhaps flattered himself that by-and-by the tumor would recede of its own accord, and that he would thus escape operative interference. Such examples are of sufficiently common occurrence among the poorer classes of people, who often find it difficult to command proper surgical aid, or who, from sheer ignorance and obstinacy, are opposed to the employment of the means so necessary for their relief. Hence, when the case is seen for the first time, the employment of the taxis is utterly out of the question; nay, it may be that even the use of the knife hardly affords any chance of success. The tumor is exquisitely tender, highly inflamed, and intolerant of the slightest manipulation; the abdomen is sore and tympanitic; the pulse is corded and very frequent; the extremities are either cold or beginning to be cold; the thirst and restlessness are excessive; and there is constant nausea, with frequent vomiting of stercoraceous matter. Obviously,

such a case is unfit for the employment of the taxis. If, with the aid of chloroform, the surgeon should be so rash as to use pressure, the result might—indeed, probably would—be most disastrous. The bowel would either be ruptured, or there would be such an increase of inflammation as would, in all likelihood, speedily destroy the patient.

There must evidently, then, be a distinction drawn between cases that admit and cases that do not admit of the employment of the taxis. Men whose experience is based mainly upon hospital practice boldly assert that the proper treatment, as a general rule, in strangulated hernia consists, not in the application of the taxis, but in the use of the knife. That this practice, as applied to such cases, is the correct practice, no one who knows anything of the nature of this form of strangulation would for one moment gainsay. Nothing else will answer; nay, even this often fails under such circumstances,—not because of the operation, but because of the hopeless condition of the part and system. But such cases are not cases for the establishment of broad, general principles; they should not be brought forward as arguments against the employment of the taxis. The taxis has its time, and, therefore, also its value; when that time is passed, then, but not until then, if the surgeon have his choice, does the knife take its place.

The knife, like the taxis, is not always employed sufficiently early: precious time may have been lost through ignorance of the surgeon, or through neglect, obstinacy, or false expectation of the patient, and when, at length, the tumor is opened, the protruded structures are perhaps gangrenous, or the system has been irrecoverably exhausted. Such cases, of course, greatly increase the death-rate of herniotomy.

The operation for the relief of strangulated hernia is generally very simple. Such, at all events, is the result of my own experience; and yet, it is proper to add, the young surgeon seldom attempts it without a considerable degree of apprehension lest he should commit some error in its performance. He has not forgotten the teachings of the dissecting-room, or the eloquence and force with which his surgical professor expatiated upon the various layers which enter into the composition of the tumor, the proper hernial sac, the seat of the stricture, and the proper method of returning the protruded structures. All these things start up before him, like so many hobgoblins, to frighten and bewilder him. They produce an impression not unlike that which is made upon the nerves of the young obstetrician by a breech presentation. All this is perfectly natural. It is one of the fruits of his education; and some experience is necessary before he can entirely shake it off. As he grows older and wiser, he forgets his anatomy and confides more and more in his grooved director. He knows that every rupture has a certain amount of covering, and that this covering has to be carefully divided before he can reach the dislocated bowel, or bowel and omentum. The minuteness with which the different layers of hernia have been described, and the stress that has been laid upon the importance of their discrimination in the use of the knife, have been productive of an immense amount of harm in an operative point of view; or, in other and more comprehensive language, they have had the effect of investing the subject with false notions of its magnitude and dangers, and thus depriving it of the simplicity which really characterizes it. I must not be misunderstood. My remarks have reference merely to the more ordinary forms of strangulated hernia, and not to those complicated cases which must every now and then arise in hospital and large private practice, and which are well calculated, by their peculiar character, to embarrass and perplex the most experienced and skilful operator.

The same preliminaries are necessary in the use of the knife as in the employment of the taxis; that is, the bladder and rectum should be sufficiently empty, the abdominal muscles well relaxed, and the patient thoroughly anæsthetized. A scalpel, grooved director, pair of forceps, and probe-pointed bistoury constitute the chief instruments. Simplicity here, as elsewhere, is the perfection of the operation. The hair being shaved off, a fold of skin is raised by the surgeon and his assistant over the most prominent portion of the tumor, and divided from within outwards by one sweep of the knife. The grooved director, somewhat sharp at the extremity, is now thrust into the subcutaneous cellular tissue, which is next freely divided; and thus the operation is proceeded with, layer after layer being successively penetrated, until the proper hernial sac is brought fairly and fully into view. Thus far everything is perfectly simple, the grooved director leading the way, and so serving as a secure and reliable guide to the knife. No sensible surgeon stops to count the different layers of a hernia, as described in the books and taught in the lecture-room. Proceeding in the manner here indicated, he is sure to go right, whether there be, as occasionally happens, only one covering besides the skin, or a considerable number of them, as when the hernia is old and bulky.

The proper hernial sac is always sought for with unusual care and solicitude. It is one of the great points in the operation. Its appearance under the knife is not always the same. In recent cases, with a moderate amount of strangulation, it often presents itself as a white bladder, of variable size and shape; but when the reverse is true—that is, when the stricture is uncommonly tight—it is generally of a purple, brownish, or claret color, and the seat of more or less vascularity, the vessels being, perhaps, distended to the very utmost. In case of long-standing hernia the sac is often much thickened, opaque, wrinkled, and remarkably firm. To satisfy himself that he is fairly down upon the sac, the surgeon pinches up a portion of it, and, rubbing it between his thumb and index-finger, to ascertain that he has not got hold of the bowel or bowel and omentum, he pierces it with the point of his knife, or, if he is in any doubt, with an exploring needle. The moment this is done, there is an escape of thin fluid, generally somewhat of a darkish cast, not unlike coffee-ground, but sometimes clear and limpid, like the purest spring-water, and at once indicative of the precise situation of affairs. The quantity of fluid varies from a few drops to an ounce or more. Commonly it does not exceed a drachm or a drachm and a half. Into the opening thus made the grooved director is now inserted, and the sac slit up and down to the requisite extent. The protruded structures being thus thoroughly exposed, the next thing to be done is to seek and divide the stricture, the great object of the operation. The proper way to effect this is to introduce the index-finger into the sac, insinuating it between the protruding structures and the point of resistance, pushing the finger well under it. Keeping the finger in this position, a probe-pointed bistoury is placed flatwise upon its palmar surface and passed on until it is well under the stricture, which is then divided by a kind of sawing motion, by turning the knife with its back towards the bowel. A short incision, not exceeding the sixth of an inch, generally suffices to liberate the parts. Another step has now been taken. The next is to return the parts, supposing that they are—which, however, is by no means always the case—in a fit condition. To do this to the best advantage, they must, as a preliminary measure, be drawn gently away from the seat of the obstruction, and then carefully replaced, bowel first, and next omentum, both being followed by the finger, that they may be carefully spread out in the cavity of the abdo-

men. This is a point of great moment in the procedure. The surgeon should never be satisfied unless he is certain that he has put the parts in their natural situation. If the symptoms of strangulation continue, it is an evidence that the reduction has been imperfectly effected, that the stricture has been only partially divided, or that the parts have been pushed behind the peritoneum and transverse fascia. In a word, the work is not finished. Search is again made for points of resistance, and the knife, if need be, again used. If no stricture be found, the cause of the obstruction may be a twisted condition of the bowel or bowel and omentum, or the stricture may be in the protruded structures, or the protruded structures may be imprisoned, as just stated, in the wall of the abdomen. In the latter case, the patient makes forcible efforts at coughing, or, what is better, the finger brings down the parts, and then pushes them more securely in place.

Finally, reduction having been effected, the wound is carefully closed with several points of the interrupted suture, supported by a compress and a roller carried round the hips and the thigh on the affected side. The needle should be passed down deep among the tissues, as the object is to effect thorough approximation of every portion of the wound, deep as well as superficial. Indeed, when it can be done, the whole muscular wall should be included in the stitch, and no possible harm will be likely to arise if it reaches through the peritoneum, in the same manner as after ovariectomy. The ligature may consist either of silk, well waxed, or of steel wire, as the surgeon may prefer; for, in reality, there is no material difference in the effect. It is impossible to lay too much stress upon the manner in which the wound and opening of descent are closed. It may be assumed as a rule that the more perfect the consolidation is, the less liable will the parts be to a recurrence of protrusion, and conversely. Hence the deep stitch is always, when practicable, of paramount importance.

The after-treatment in herniotomy must be conducted with the greatest possible care and attention. The most perfect quietude of mind and body must be observed; the abdominal muscles should be maintained in an easy and relaxed position; the bowels should be locked up with full doses of morphia, repeated every twelve hours; and the diet should be of the mildest and most concentrated character, consisting, for the first few days, exclusively of beef-essence, milk, or animal broth, taken in small quantity, not too frequently repeated. The nausea consequent upon the strangulation generally promptly disappears of its own accord; if it persist, the most appropriate remedy will be a dose of chloral or the neutral mixture, with a sinapism to the epigastrium. A third of a grain of morphia, hypodermically injected immediately after the operation, generally answers the fourfold purpose of allaying gastric irritability, tranquilizing the system, inducing sleep, and constipating the bowels. The bladder must be relieved, for the first few days, with the catheter. An enema of turpentine and assafetida may, at any time, be employed to free the bowels of gas; but no laxative—not even one of the mildest kind—should be administered until all danger of peritonitis is passed. As a general rule, it is well to withhold all medicines of this description for the first five or six days. Solid food should not be given for at least one week, and then only in small quantity and with the greatest care, lest portions of undigested articles should come in rude contact with the recently constricted structures, and thus occasion pain and obstruction, if not more serious trouble.

As the great danger after strangulated rupture is peritonitis, every effort should be made to prevent it, or, if it have already taken place, to moderate and remove it. It is not necessary to repeat here what is familiar to every practitioner in regard to the symptoms

of peritonitis. The small, frequent, corded pulse, the pinched features, the tender and tympanitic abdomen, the intolerance of the slightest pressure and of the weight of the bedclothes, the retracted limbs, the cold extremities, the gastric irritability, and the general restlessness, all point, with unerring certainty, to the nature and seat of the disease. The most important means of counteracting the morbid action are leeches, turpentine and laudanum stupes, vesication with cantharidal collodion, and morphia in full and repeated doses, to relieve pain and restlessness and to lock up the bowels. General bleeding must not be omitted, if the patient is robust and plethoric and the disease is still in its incipency.

When the patient is ready to leave his bed, the affected parts must be supported with a well-constructed and well-adjusted truss; otherwise the adhesions will almost be sure to give way, followed by a reproduction of the rupture. The parts generally remain tender for some weeks, and are consequently unable to bear much pressure. It need hardly be added that the patient should forever after guard most scrupulously against all the exciting causes of the complaint, especially straining and heavy lifting.

In our next lecture we shall study the condition of the protruded parts, and speak of certain operative procedures which time will not permit us to consider to-day.

## CLINICAL LECTURE

### ON HYDROPHOBIA.

BY J. FORSYTH MEIGS, M.D.,

Physician to the Pennsylvania Hospital.

Delivered Saturday, October 30, 1869.

(Concluded.)

**GENTLEMEN:** On the 11th of last month I read you the history of a case of hydrophobia which had been in the house two days, and which had proved fatal on that very morning. I also made some remarks upon the cause of the disease, its diagnosis, prognosis, and treatment, and promised to inform you of the results of a post-mortem examination which I proposed making, as soon as these could be prepared for you. I proceed now to fulfil this promise. I shall first read you the notes made at the time of the examination by Dr. George Pepper, and then refer to some microscopic examinations of the tissues made at a later date.

*Post-Mortem Examination at 4 P.M. of the Day of Death, September 11, 1869.*

Body very muscular and well nourished. Muscular system unusually developed. Cadaveric rigidity well marked, but not at all excessive. Expression of face perfectly placid. Extensive saggillation of dependent portions of body and limbs.

*Brain structure* of normal consistence and appearance. No marked increase of the puncta cruenta; no thickening or opacity of membranes; considerable venous congestion of meninges; slightly increased amount of perfectly limpid cerebro-spinal fluid in subarachnoid space; no effusion in the ventricles.

*Spinal cord.*—Of good consistence; no softening or unusual congestion; slightly increased amount of spinal fluid.

*Lungs.*—Partially collapsed, but readily and entirely inflatable; intensely congested, and of a deep purplish color; no structural disease; no pleuritic effusion or thickening.

*Heart.*—Of normal size; firmly contracted; structure and valves perfectly normal. Right auricle distended with black, fluid blood. Left auricle empty. Right ventricle contracted; a small, dark, soft clot in its cavity. Left ventricle firmly contracted; a small "chicken-fat" clot, about the size of a



bean, in its cavity. With these exceptions, the heart was empty.

*Liver*.—Large, deeply congested, apparently perfectly normal.

*Kidneys*.—Healthy; gorged with blood; capsule, in being separated, drags with it small portions of the cortical structure.

*Spleen*.—Dense, apparently only from intense congestion; of normal size and perfectly healthy.

*Tongue*.—Papillæ at base congested and slightly enlarged.

*Larynx* and *pharynx* perfectly healthy—not even congested.

*Intestines* healthy.

*Arteries* healthy; deeply stained by the blood.

*Blood* everywhere, with the exception of the clots alluded to in the heart, perfectly fluid, bistre-colored.

Dr. William Pepper, the curator of the hospital museum, writes me as follows as to the microscopic examination of the brain and spinal marrow:

The portions of nervous tissue taken for examination from the case of hydrophobia consisted of pieces of cerebral hemispheres, corpora striata, pons, medulla, and the entire spinal cord. All the portions were examined with high powers in the recent condition, and, in addition, the spinal cord was thoroughly hardened in alcohol, and fine sections cut with a razor, which were examined with a low as well as with a high power.

The brain, corpora striata, pons, and medulla were in all respects healthy; their consistence was good, and both cells and nerve-fibrils were normal. The tissue of the spinal cord was also entirely healthy; the nerve-fibrils presented a normal appearance, and the cells of the gray substance contained no excess of granular matter, and retained their normal shape and polar prolongations.

The blood-vessels and perivascular sheaths, both of brain and spinal cord, were healthy. Examination of sections of the cord showed no disturbance whatever of the normal relations of the parts by interstitial effusion or degeneration.

Dr. Joseph G. Richardson, the micrographer of the institution, examined the saliva and blood of the patient, and I will read the account he has sent me of the results of the investigation. His note is dated September 16, and is as follows:

The ordinary mode in which hydrophobia is conveyed from the inferior animals to man, as well as the frightful activity, in most cases, of the associated glands and mucous membrane engaged in the secretion of the saliva, point so strongly to the salivary apparatus as playing an important part in the disease, that it seems surprising that no careful microscopic investigation has hitherto been made of the salivary fluid; and the opportunity afforded by this well-marked case was eagerly seized upon to supply some part of the omission.

When the patient had been properly secured, during the violent paroxysms occurring on Friday morning, twenty-two hours before death, and, consequently, at a time when the symptoms were fully developed, I managed, after several abortive efforts, to catch in a tumbler a portion of saliva as it was ejected from the mouth, and to preserve it in a small vial quite free from extraneous matter. As first collected, it was pure white, and filled with air-bubbles; but, after standing for about three hours, this froth subsided into a transparent, colorless, jelly-like substance, very viscid and tenacious, inodorous, or nearly so, and having a slightly alkaline reaction; in quantity it amounted to about one-third of a fluidrachm. When examined under the field of a  $\frac{1}{2}$  inch objective, giving an amplification of about 1200 diameters, this material showed most of the usual constituents, except that none of the ordinary salivary corpuscles with actively revolving molecules were visible; but in their stead were observed numerous rounded, oval, or irregular bodies, averaging about  $\frac{1}{1000}$  of an inch in diameter, many of them in active amœboid motion, thus strongly resembling the cells of common yellow mucus. These were, on further consideration, supposed to be salivary corpuscles which, on account of the density of the medium in which they were imbedded, had failed to expand; and, to test this theory, the secretion was thoroughly mixed with

twice its bulk of pure water, and, after a short interval, another portion examined, when it was found that the corpuscles had become spherical and showed the rapid movement of their contained molecules, presenting, in fact, the external appearances of normal salivary globules. From this experiment we may calculate the original specific gravity of the viscid saliva to have been about 1021 instead of 1007, its usual average density.

But, although these salivary corpuscles resembled, when thus distended, in size, shape, number of nuclei, etc., those of the healthy secretion, many differed from them in the character of their cell-walls, which often seemed to have undergone a process of fatty degeneration precisely analogous to that so commonly seen in cells of a fatty liver or kidney. This apparent deposit of fat was in the ordinary form of globules and oval masses, varying in size from the  $\frac{1}{1000}$  to the  $\frac{1}{100}$  of an inch in diameter, and occurring to a greater or less extent in about one-third of the corpuscles; like fatty matter in cells from other portions of the body, it often showed itself in the form of one comparatively large, two or three smaller, and several minute, highly refracting particles, irregularly scattered within the boundary of the cell-wall.

In accordance with the doctrine that the salivary mucus and white blood corpuscles are identical, I was led to expect some similar change in the white cells of the blood, and the following day, at the autopsy, I was enabled to procure specimens for careful investigation. About half a fluidrachm of blood was pressed from the median basilic vein and from the ascending vena cava, and a portion of the latter vessel, just above its origin, was twice tied firmly and removed. When examined next day, it was found to contain at least a fluidrachm of blood between the two ligatures, which had not been exposed to any possible admixture. Of these specimens, that from the basilic vein coagulated feebly into a soft, curant-jelly-like clot, while those from the vena cava remained almost fluid. On examining them with a power of 1200 diameters, the red disks were seen to be normal in size, shape, color, and power of aggregation into rouleaux, in spite of the entire absence of fibrin, no filaments of which could be detected, although I now rarely fail to find them in healthy blood. The number of minute bacteria-like bodies appeared to be somewhat increased, and the proportion of dumb-bell-shaped particles to molecules visible only as mere points was decidedly augmented. The amœboid movements of the white blood corpuscles were of rather more than ordinary activity, and most of the cells exhibited a normal appearance, but at least fifteen per cent. of their number had, either within their cavities or imbedded in their membranous walls, highly refracting particles varying in size and shape, although generally rounded in contour, and somewhat like what may often be observed in the pus corpuscles of a chronic abscess. One white blood cell, containing an apparent fat globule, about one-fifth of the diameter of a red blood disk, was watched for upwards of ten minutes, while it made its way among the rouleaux of red corpuscles for a distance of at least ten times its own length, and during this whole journey the particle (supposed to be of fat) remained near the centre of the moving mass. On the addition of water to swell up the white blood corpuscles (as described in my paper in the *Pennsylvania Hospital Reports* for 1869) in the usual way by endosmosis, these refracting granules generally remained attached to, or imbedded in, the cell-wall; but in two instances they were observed floating freely in the cavity, and apparently jostled from side to side by the active movements of the contained molecules.

On treating the blood thus diluted with a solution of aniline, no coloration of the apparent fatty globules was perceptible until long after the nuclei and cell-walls of the white corpuscles had become strongly tinted.

Liquor potassæ rendered these particles more distinct by dissolving, or at least rendering invisible, the limiting membrane of the white cell, thus indicating that there were no delusive appearances produced by the corrugation or condensation of the membranous investment. Repeated efforts were made to test for fat with ether, but the difficulties attendant on the application of this reagent under such a high power were so great that no positive conclusion could be reached; it was, however, unanimously agreed by several experienced

microscopists, to whom I exhibited specimens, that these white corpuscles presented a wonderful resemblance to cells which had undergone fatty degeneration.

Of course, any deductions from these appearances until corroborated by other observers would be premature; and, indeed, I am only induced to lay results based upon a single case before the profession by the fact that such is, fortunately for our race, the comparative rarity of the disease that years may elapse before another similar opportunity for investigation occurs in this hospital, during which time the researches of other microscopists, whose attention is hereby invited to the subject, may contradict or confirm my conclusions, and, in the latter alternative, afford some assistance, perhaps, in penetrating the obscurity which has hitherto surrounded the etiology of hydrophobia.

You have now heard, gentlemen, a particular account of the results obtained by a careful post-mortem examination; and what do they teach us? Nothing, or almost nothing. We found in this case, as have other observers, a fluid state of the blood, congestion of the lungs, liver, spleen, and kidney, and a marked degree of staining of the lining membrane of the arteries. These are the conditions which have been usually found. A careful examination of different portions of the brain and spinal marrow revealed no departure from the normal condition of those organs. Whether a still more thorough investigation of the cerebral and spinal tissues by the method employed by Dr. Lockhart Clarke for the elucidation of the pathology of tetanus may yet throw light upon the true nature of this disease, remains to be seen. It ought certainly to be done so soon as any one who is competent, and who has the time, can find the opportunity. It would seem not unlikely that Dr. Clarke's method may do for the morbid anatomy of hydrophobia what it has already done for that of tetanus.

The condition of the salivary and white corpuscles of the blood, as described by Dr. Richardson, is certainly very interesting, and, so far as I know, quite new. Whether they are constant in the disease, and what value they may have in affording an insight into the effects of the rabies-poison upon the fluids of the body, must remain an open question. We are still too little acquainted, moreover, with the changes determined in the blood by the introduction of animal poisons into the body, to know whether the conditions found by Dr. Richardson are peculiar to hydrophobia, and what may be the influence of such changes on the vital processes of the economy.

The pathology of the disease is therefore involved in obscurity. All we know about it is that the introduction into the economy of man of the peculiar animal poison produced in animals affected with rabies, determines, to use the words of Romberg, an excess of reflex tension in the common origin of the nerves of respiration and deglutition, a manifestation of increased excitability in relation to stimuli indispensable to life, as air and water, and corresponding motor discharges by the nerves of deglutition and respiration.

## ORIGINAL COMMUNICATIONS.

### SUSPENSION IN SPINAL AFFECTIONS.

BY BENJAMIN LEE, M.D.,  
of Philadelphia.

Read before the Medical Society of the State of Pennsylvania, June, 1870.

THERE is no single characteristic of the human form which more entirely commands our admiration, and more strikingly distinguishes it from those of the various families of the brute creation, than its erectness. So universally is this fact recognized, that it has

been incorporated into our language. Considering an erect carriage and a well-poised head as an index, and hence a type, of a perfect physical organization, we, in common with the Germans, have carried the idea into the domain of ethics, and designate the individual who exhibits, in his dealing with his fellows, a healthy and undistorted moral nature, an *upright* man.

It is to the spinal column, and its mode of articulation with the pelvis and the head, that this noble peculiarity of our race is due. Any diseased action in either the essential or accessory constituents of this important organ must sooner or later result in the impairment of this distinguishing feature. Three deductions have been made from this well-understood fact, which have been shared, at different times to varying degrees, by the medical profession and the general public.

1. That a loss of erectness of figure, as a rule, indicates spinal distortion, and hence diseased action in either the spine or its motor apparatus.

2. That the distortion is not only an indication, but an actual element, of the disease, directly tending to aggravate and perpetuate the morbid conditions; and hence,

3. That a restoration of the distorted spine to or towards its normal position is an important means of checking the destructive processes and restoring it also to a healthy state.

It is on this last proposition that the mechanical treatment of spinal distortions is rationally founded. Two methods of effecting the result which it contemplates early suggested themselves. They may be designated as the *method of counter-extension* and the *method of counter-pressure*,—the first being an effort to straighten out the curved spine by traction in the line of its axis, acting in opposite directions from its two extremities; the second, to unbend the curve by forces applied at right angles to the line of its axis,—in one direction at its two extremities, and in the opposite direction against its point of greatest convexity. Both methods may be practically carried out in two ways: either by means of apparatus worn upon the person, indifferently called braces, supporters, assistants, splints, etc., which I shall designate as *spinal instruments*, or through the medium of apparatus acting from some fixed point of support outside of the person, which I shall call *spinal machines*. I have already, elsewhere,\* assigned my reasons for believing that spinal instruments should be made only on the principle of counter-pressure. My object in the present essay is to indicate the perfect applicability of the principle of counter-extension to the construction of spinal machines, and to call attention to the rapid and admirable results attainable by its means.

I am well aware that for years past it has been the fashion for medical men to decry extension of the spine by machinery as unscientific and dangerous, those who write with special reference to these affections treating it with contemptuous ridicule, while systematic authors entirely ignore it. It has had powerful advocates, however, on both sides of the water. Among the more important in England may be mentioned Darwin,† Shaw,‡ and Sheldrake,§ and, in this country, Kissam, of New York, and Prof. Mitchell,|| of this city, the latter of whom, with that carelessness of purely theoretical criticism which characterized the man, was particularly

\* Transactions American Medical Association, 1866; and Contributions to the Pathology, Diagnosis, and Treatment of Angular Curvature of the Spine. Philadelphia, J. B. Lippincott & Co., 1867.

† Zoönomia, or the Laws of Organic Life. By Erasmus Darwin. Vol. iii. p. 140 et seq.

‡ Observations on the Causes and Early Symptoms of Defects in the Form of the Spine, Chest, and Shoulders. By John Shaw. London, 1827.

§ A Treatise on Diseased Spine and on Distorted Spine, with Cases to illustrate the Success of a New Method of Cure. London, 1816.

|| North American Medical and Surgical Journal, No. 1, 1826.

enthusiastic in its support, and, I may add, as successful in its employment. A surgeon of many years' standing in the navy of the United States is a living monument to the admirable results which that physician obtained in cases of spinal caries.

The plan which he adopted was the seemingly rather severe one of suspension by the head in the erect posture, the weight of a portion of the trunk and of the lower extremities being the extending force. This differed altogether from that of Shaw, who placed his patient in a recumbent posture and applied traction at the head and pelvis, and, to a considerable extent, from those of Darwin and Sheldrake, who, though they relied upon the weight of the body for their force, had their patient supported upon an inclined plane. Nevertheless, the idea was not a new one with him, by any means; for we find Bampfield saying that "in the erect state of the body the spine can be stretched by swinging by the head or by the hands," and that, "if it be the intention to stretch the upper half of the spinal column, swinging by the head will more particularly effect it, whilst the weight of the lower extremities will also extend the lower vertebrae in some degree." The portion of the appliance which Dr. Mitchell used, which was claimed by him as his own idea, as I understand it, was the *go-cart* provided with the means of suspension, which had for its object the conjunction of locomotion with extension, and which he termed, appropriately enough, his "spine-car." It is to this plan of extension by partial or complete suspension in the vertical position, whether in the standing or sitting posture, that I desire for a few moments to call the attention of the society. And, first, I wish to point out certain weak points in the treatment of spinal caries by counter-pressure in which I consider that it is most advantageously supplemented by this method. Our avowed object in making use of antero-posterior force in a horizontal plane is to substitute the oblique articulating processes, in great measure, for the vertebral bodies at the seat of disease, as the axis of support for the weight of the head and trunk. Now, while it is true that these processes are of comparatively firm texture, and almost invariably free from disease, it is also certain that the constant endurance of a weight so much greater than that which nature intended them to bear must be attended, in time, with a certain amount of absorption of their tissue. Besides this, their opposing surfaces are so oblique that much of the weight will necessarily fall upon their ligaments, which must become more or less relaxed, and thus permit the processes to slip by one another, distorting the articulation, and diminishing the height of the patient. This is one unfortunate result of this method. The other consists in the fact that we have no means of determining at what point in the column, intermediate between our opposing forces, either above or below the seat of the projection, the pressure applied against the spine in an anterior direction shall cease to exert its force. Theoretically, it should do so just where the abnormal projection meets the normal line of the column. But if there happen to be a weaker point than this, the force will be transmitted to that point, and we shall have an incurvation produced which, when below the projection, assumes the very troublesome form known as *lordosis*. This is a second evil, which can neither be prevented nor corrected by apparatus worn upon the person. But I think it will be acknowledged that extension by suspension—taking off this destructively abnormal weight from the processes, and gently stretching out the consecutive curve—is admirably adapted to palliate, if not to entirely remove, these difficulties.

The degree of pressure, too, which we are compelled to make use of in redressing the curve is sometimes so great as to provoke a superficial abrasion of the cuticle. This is especially apt to be the case in warm weather.

Under such circumstances, modified suspension furnishes an admirable substitute, for a sufficient length of time daily to give an opportunity for reparation of the surface. It is also especially adapted to caries in the cervical region, affording the patient the most complete and delightful relief from the agonizing pain or wearisome discomfort which the weight of the head gives rise to.

I present, for the inspection of the society, three different pieces of apparatus, or machines, in which this principle is applied. And, in order that you may the better appreciate the mode of application, and the entire ease with which they are used, some of my patients who have been treated in this manner have kindly consented to be present and allow me to demonstrate their action.

*Case I.*—The little patient whom I now introduce to you is 7 years old, rather short of stature, as you see, but ruddy and well nourished, having the complete use of his limbs, walking freely, fearlessly, and naturally. When he first came under my care, five years since, he was completely paralyzed in the muscles of the lower extremities and, to a great extent, in those of the trunk, as indicated by inability to move even the terminal phalanges of the toes, or to maintain the sitting posture. His condition was, in fact, altogether a critical one. The cervical portion of the spine being the seat of caries, and two vertebrae having been, to a considerable extent, destroyed, the head was tilted back until the occiput rested on the shoulders, and so firmly that it was impossible to insert the finger beneath it, while the skin of this region was acquiring that moist, mucoid character often noticed when cutaneous surfaces are kept in constant apposition. He suffered from constant dyspnoea, respiration being to a great degree diaphragmatic; had frequent attacks of spasmodic gastralgia; was greatly emaciated; passed sleepless nights; and was, as may be imagined, excessively irritable, allowing his mother and nurse not a moment's ease. The application of a splint, provided with a head-piece for producing erection of the cervical spine by means of antero-posterior force, very soon relieved all his most pressing symptoms, but it was some months before he acquired sufficient muscular power in the legs to be able to move the toes. At this time my attention was called by Dr. S. Weir Mitchell, in consultation with whom I first saw the case, to his father's experiments and successes in the employment of suspension. Although greatly prejudiced against its use, I felt that at least no injury could ensue if it were employed with proper precautions, and determined to give it a fair trial, considering that a desperate case justified what I then viewed as a desperate remedy. I therefore had made for him this steel rod, bent at right angles and provided at its lower end, for a distance of about eight inches, as you see, with ratchet teeth on one side. The horizontal portion of this rod, carrying a steel bow, to which the chin and occipital strap could be attached, passes over the head, while the vertical serrated portion is received into a keeper screwed to the back of the little chair in which he ordinarily sat. The straps being adjusted to the head, I am enabled, by means of a pinion-key introduced at the back of the keeper, to elevate the rod, and thus extend the cervical spine at will. Conscious of relief, from the complete removal of the weight of the head from the ulcerated and sensitive vertebrae, the little fellow, to my surprise, became at once reconciled to so singular a position, and even enjoyed it. The paralysis now began to diminish with notably increased rapidity, so that he was soon able to sit alone, and could move the legs slightly. With a view to give him an opportunity of exercising these reawakened muscles, and of associating amusement with the necessary confinement, I therefore had a little rocker constructed upon which his chair could be fastened. This you now see before you. Placing him upon it, adjusting the straps, and making extension, you see how completely the head is supported, and yet with what freedom and fearlessness he rides, turning his head from side to side at pleasure, and bringing almost all the muscles of the trunk and lower extremities into active, though gentle, play. This amused him, and he often spent two or three hours a day upon it, with the effect of greatly



increasing his muscular power. He was still, however, unable to walk. In order to teach him to stand and to encourage the natural movements of the legs, I then had this car or perambulator constructed (simply the child's go-cart, formerly so much in vogue for infants learning to walk), with a keeper attached to it posteriorly to receive the ratchet-rod. In this he was at once able to stand up without risk of falling, and soon began to take steps. The paralysis being completely relieved, the general health restored, and the position of the head greatly improved, his mother's anxiety was now aroused with regard to that inevitable accompaniment of carious destruction of cervical vertebrae,—distortion of the thorax anteriorly, and projection of the lower end of the sternum, unquestionably a very unseemly and distressing phase of the deformity. To remedy this defect as far as possible, by bringing the pectoral and other muscles of the thorax into action at the same time that spinal extension was being carried on, I devised—partly in imitation of Dr. Mitchell, and partly acting on a hint contained in a little German work on the "Treatment of Deformities by Curative Gymnastics," by Dr. Nitzsche, director of the "Orthopædeon" at Dresden—the *spinal swing*, a specimen of which I have caused to be erected here for your inspection. The contrivance for the support of the head is the same as in the other machine, viz., the steel bow with the double strap for the chin and occiput, in which the head is exactly balanced. But the elevating apparatus is now entirely different. Instead of the ratchet-rod, we have a stout cord or rope, and in place of a key and spring as an extending force, the patient's own hands and strength of arm. It is not necessary to have a frame constructed like this before you. A pulley may be firmly attached to a joist in the ceiling or over a doorway; the former is preferable, as giving greater length of rope, and, therefore, more freedom and variety of motion. Over this pulley passes the rope. One end of it is firmly attached to the steel bow over the top of the head; the other hangs down in front of the patient's face, and is provided with two movable ovoid blocks, which, sliding on the rope, serve as handles. These are placed from three to five inches apart, according to the size of the patient, and retained in position by a knot under each. The lower one should be about on a level with the top of the patient's head. Now, it is evident that, the head-straps being applied, as soon as the patient makes traction upon the rope by means of the handles the force is transmitted over the pulley directly to the head, which is thus drawn upward, and that the weight is equally shared by the head and the hands; so that, when the feet are raised from the floor, just one-half the patient's weight, less that of the head, is supported by the cervical spine. It is also plain that, when the disease is below the line of attachment of the arm to the trunk, the entire weight of the body below that point will be our extending force. The apparatus being under the patient's control, however, it is optional with him what amount of force he shall make use of. In the case of children, it is oftener necessary to caution them against using too much than to urge to use more. You see this little fellow gradually drawing himself up on his tiptoes, and now actually lifting his feet and allowing me to swing him back and forth, not only without pain, but with positive enjoyment. Under the use of this machine for from one to two hours a day, there has been a gradual amelioration of the thoracic distortion, the ribs assuming a more natural position, and the sternum falling more towards its normal inclination, while the general capacity of the chest has increased. A tendency to chronic and occasionally acute pulmonary catarrh, which more than once threatened to prove fatal, and which I was inclined to attribute in part, at least, to the compressed condition of the lungs, has also almost entirely disappeared.

*Case II.*—The young girl whom I now bring before you has been under my care since September last. She is 17 years of age. Her parents are both living. The father suffers from chronic rheumatism, but I am not able to discover any history of strumous antecedents. About a year before her physician called me to see her, her health having been previously all that could be desired, she began to suffer from pain in the back. This increased steadily, and in about six weeks wandering pains began to develop themselves in the head, radiating from the temples. Before long she observed that, after sitting for any

length of time, she became stiff and could walk only with considerable difficulty. So great was this rigidity on rising in the morning, that it took at least two hours for her muscles (the flexors of the thigh more particularly) to become sufficiently relaxed to enable her to walk with any comfort. She grew steadily worse all winter, and early the next summer was obliged to give up her trade, which was that of envelope-folding, in consequence of the frequent falls which she had when walking in the street. These falls were caused by a sudden spasmodic contraction of certain of the flexor muscles of the thigh (principally the psoas and piriform, presumably) of the left side, accompanied by excruciating pain in the hip. This pain and spasm also often attacked her during sleep, causing her to wake with a scream. By this time the headache had become very severe, and was often attended by obstinate vomiting. When I first saw her it was almost constant, as well as the pain in the hip already referred to. She was much emaciated, without appetite, not able to stand erect, or to walk across the room unassisted. Her physician had run through the whole list of anodynes without succeeding in relieving the pains, and greatly to the disgust of her stomach. I felt not the slightest doubt, from the symptoms, history, and attitude of the patient, that there was serious inflammatory, and probably ulcerative, disease going on in the spinal column; but it was impossible to discover its seat, no projection of a spinous process having yet taken place. From the absence of gastralgia, I concluded that it was below the dorsal region, and from the intense pain in the hip, that it was quite low in the lumbar region. I suggested to her physician that, the location of the diseased action not being positively indicated, it would be well to wait a short time before applying anything in the shape of a brace, and meanwhile to give what relief we could by the use of suspension. Accordingly, I caused a spinal swing to be put up directly over the couch on which she lay, and directed her to use it three times a day for ten minutes, gradually increasing the time as she became accustomed to it. This she did very rapidly, owing to the agreeable sensation of rest which the act of extension gave her. By the end of a week I was rejoiced to find her almost free from pain, with no vomiting, and quite a creditable appetite. The rigidity of the limbs was diminishing, and she could walk with some ease. By the end of the third week, however, I felt confident that I could detect a slight bulging of the last lumbar vertebra, and at once ordered a splint to be made, to give support in that region. In a week from this time she walked to my office and back, a distance of half a mile, in order to have it applied. Her improvement was now so rapid that at the end of three months she resumed work for half a day, and for the past four or five months has been working her full time, although somewhat against my advice. During the winter she has once even ventured to go to a ball and indulge her terpsichorean tastes. Her menses, which were suspended for several months, returned soon after the application of the splint. She continues to use the swing, and, as you see, although quite heavy, is not afraid to bear her weight strongly upon the head-straps. She generally uses it, however, in the sitting posture, with weights attached, in order that she may be able to employ her hands. I do not need to say anything as to her present condition. Her firm, elastic step, rosy cheek, and bright eye, testify plainly enough what her general health is. Her treatment, I may add, has been purely mechanical, no internal remedies having been used.

*Case III.*—This lad, the last case which I shall detain you to see, is fourteen years old. I first saw him in November last. He was then lying about the house, good for nothing, pale and anæmic, and—having been obliged to give up going to school, in which he was much interested—very despondent. He complained of headache, pain in the hips, running down one limb to the knee, morning rigidity, and exhaustion on walking a very short distance, so that he could not go a square without stopping to sit down to rest. In this case, also, not a trace of posterior deviation existed; but, upon causing him to stoop forward, a slight yielding towards the left appeared in the upper part of the lumbar region. Profiting by my experience in the last case, which was then just beginning to feel the benefit of the brace, I determined to give him support at once,—not emulating the caution of the practitioner of whom I re-

cently heard, who, when consulted in a case of suspected spinal disease, gravely informed the anxious mother that it might be necessary to wait two years before it could be determined whether such were the case or not. A spinal swing was put up for him the next day, and so rapid was his improvement that in a week he was able to walk to my office, a full half-mile, to have his splint applied. In three months he was at school again, and has recently obtained my permission to play base-ball. He also, as you see, has no fear of hanging, if allowed to be his own executioner. This case is one of the deepest interest, from the gratifying fact that not a particle of deformity has made its appearance. I hold that the success of the treatment fully substantiates the correctness of the diagnosis, and that this boy is another living witness to the truth of the principle for which I have long contended—that inflammation of the spinal column is perfectly recognizable before it has reached the stage of caries and deformity, which evils may therefore, under favoring circumstances, be entirely averted. That it requires no education as a specialist to make the diagnosis in such cases, is sufficiently proven by the fact that the physician in whose practice these two very interesting cases occurred had in both instances become reasonably well convinced of the true nature of the disease before soliciting my assistance.

This mode of treatment is equally applicable to lateral curvature. In the incipency of that affection, indeed, it may be unaided be adequate to work a cure. By causing the patient habitually to take hold of the higher handle with the hand corresponding to the depressed shoulder, that shoulder is thus, for the time being, elevated and its muscles thrown into more powerful action than those of the opposite side, while the curve of the spinal column, if not too rigid, is entirely reversed, and, under any circumstances, diminished.

The advantages of the mechanical treatment in such affections, judiciously combining the use of instruments and machines, over that which consists in confinement to the horizontal posture and the establishment of exhausting purulent discharges, are incalculable. While it is, to say the very least, as successful in preventing and controlling deformity, it affords to constitutions which so pressingly demand them, those sovereign tonics, *exercise* and the *open air*.

#### PHYSIOLOGICAL ACTION OF THE LEAVES OF THE ERYTHROXYLON COCA ON THE EXCRETION OF URINE.

BY ISAAC OTT, M.D.,

Easton, Penna.,

Late Resident Physician at St. Mary's Hospital, Philadelphia.

WITH the exception of Mantegazza's statement, apparently resting on no analyses, that Peruvian coca increases the excretion of urine, we know of no other observations on this subject. During the period of these experiments we arose at 7½ A.M. and retired at 9 P.M. We were thus awake thirteen and a half hours, and asleep ten and a half. During the waking hours, five and a half were devoted to uniform exercise, and eight to study. We breakfasted at 8 A.M., dined at 12 M., and supped at 6 P.M. Having ascertained the required amount of food to keep up our weight, we ate at breakfast one ounce of bread, three ounces of eggs, ten grains of salt, and three drachms of butter; at dinner, two ounces of beef, a half-ounce of butter, and two ounces of bread; at supper, one ounce of bread, an ounce and a half of beef, and a half-ounce of butter. The weights of food are troy. We drank, at 7 A.M., 8 A.M., and 12 M., two hundred centimetres of water, with three hundred at 6 P.M. Thus, we daily ingested four ounces of bread, eleven drachms of butter, three ounces of eggs, three and a half ounces of beef, and ten grains of salt, with nine hundred centi-

metres of water. In the following tables our weight is in pounds, and was taken at the same hour on the last day of each series of experiments; the daily quantity of urine in centimetres, and its factors in grammes. We estimated the urea and chloride of sodium by the mercuric nitrate, sulphuric acid by the chloride of barium, phosphoric acid by the acetate of uranium, and free acid by caustic soda. The quantity of free acid is expressed by grammes of oxalic acid. These volumetric solutions were of the strength laid down by Neubauer and Vogel in their "Analyse des Harns," 1867.

With the preceding conditions, the following table was computed for five days. The mean thermometric degree was 74° F.

Weight of Body.	Quant.	Urea.	Chlor. of Sodium.	Sulph. Acid.	Phosph. Acid.	Free Acid.
121½	1st day,	666.2	24.4200	9.7020	1.4621	1.4256
	2d "	680.5	24.0400	9.1120	1.8360	1.4280
	3d "	856.1	25.6800	9.5872	1.7120	1.4124
	4th "	961.8	25.5055	10.8593	1.9316	1.4030
	5th "	947.6	25.4491	10.4170	1.5530	1.4583
Average		821.24	24.8189	9.9355	1.6989	1.4254

During the continuance of the preceding experiments our general health was excellent. The above table shows the average quantity of urine, and the state of its urea, chloride of sodium, sulphuric, phosphoric, and free acids, for five days. The day following these experiments we added one drachm of coca leaves to each meal, and on the remaining days two drachms, and began the experiments tabulated below, under the same conditions as in the preceding series.

The experiments were continued five days. The average temperature was 72.8° F.

Weight of Body.	Quant.	Urea.	Chlor. of Sodium.	Sulph. Acid.	Phosph. Acid.	Free Acid.
121½	1st day,	899.5	25.1720	8.9900	1.5822	1.4563
	2d "	792.1	22.5720	7.2072	1.2334	1.5543
	3d "	718.8	22.0242	5.3850	1.4072	1.3929
	4th "	718.5	22.2540	5.0260	1.3642	1.3498
	5th "	739.3	22.0222	5.9859	1.4336	1.4188
Average		773.64	22.8088	6.5188	1.4041	1.4344

On comparison of the averages of each five days, we find that the addition of the coca decreased the quantity of urine 47.60 centimetres; of the urea, 2.0101 grammes; of chloride of sodium, 3.4167 grammes; of sulphuric acid, .2948 grammes; of free acid, .6945 grammes; and increased our weight one-eighth of a pound, and the phosphoric acid in the urine .0090 grammes. The action on phosphoric acid is to be considered normal. During the period of these last experiments our sleep was somewhat disturbed, with frequent headache, and slightly diminished appetite. Microscopically, we found in the urine an abundance of octahedral crystals of oxalate of lime of all sizes, which were got rid of by filtration. On micro-chemical examination of the leaves, we found quadratic crystals, soluble in hydrochloric acid but not in acetic, which we believe to be oxalate of lime crystals, and the source of those in the urine. Beneke's statement that the earthy phosphates are dissolved by oxalic acid, and appear in greater abundance when that acid is most formed in the human economy, possibly may be the explanation of the fact that the phosphoric acid was not diminished. From an examination of these experiments we are led to



the conclusion that coca is a retarder of the retrograde metamorphosis of tissues, thus increasing the weight of body. The origin of the frequent headache, the disturbed sleep, and deficient appetite is not to be sought in the digestive apparatus, but rather in an influence similar to that exerted by other excitants of the nervous system, as coffee and tea. Although the diminution of tissue-waste, as indexed in the urine, is not so great as was to be expected, knowing the arduous labor performed by the Peruvian Indians under its use, yet it is probable that there may be a greater decrease of the other excretions of the body. Its action on the urinary constituents is the same as that of coffee, as heretofore supposed. On comparison with tobacco, we find that the habit of chewing the leaves of each is not easily dismissed, that the water, urea, and chloride of sodium are decreased by both, but that the uric, phosphoric, sulphuric, and free acids are increased by tobacco. The effects of the habitual use of each on man can be explained by this action on the urine; for coca is not known to cause any great detriment to the health, or to shorten life, while tobacco in excess undoubtedly does the former, and probably the latter. From these data we conclude that coca-chewing is far preferable to tobacco-chewing, and that the former, without doubt, can be useful to persons having much labor to perform, with a scanty supply of food; although where food is abundant we see no good reason for the use of coca. We regret that we were unable to calculate the amount of feces, of perspiration, and of the water and carbonic acid of the expired air; yet we hope that we have added a few facts of therapeutical as well as physiological value.

## NOTES OF HOSPITAL PRACTICE.

### UNIVERSITY OF PENNSYLVANIA.

CLINIC FOR DISEASES OF THE EYE AND EAR, OCTOBER 27, 1870. SERVICE OF DR. GEORGE STRAWBRIDGE.

THE following cases were exhibited and commented upon:

I. A case of Chorioiditis suppurativa, occurring in a man aged 26, who, about five weeks ago, was struck by a small glass splinter, which perforated the left cornea at its lower outer quarter close to the sclerotic border, and doubtless penetrated through the ciliary bodies into the vitreous humor. Four days afterward the cornea was slightly cloudy, as well as the aqueous humor, with commencing cloudiness of the lens, accompanied by great ciliary injection and great pain on pressure on the eyeball. To-day a peculiar yellowish-golden reflection is observed from behind the lens in the anterior portion of the vitreous humor; the eyelids are much swollen, and have an increased temperature. The treatment consisted in the application of six leeches to the temple, the local use of a solution of atropine,—four grains to the fluidounce,—and the administration of a saline cathartic. Foreign bodies penetrating into the vitreous humor generally by their own gravity sink to the lower part of the eyeball; and some cases are reported where, by an incision through the sclerotic and the other tunics of the eyeball, immediately under the foreign body, the foreign matter was extracted. In this case, unfortunately, the patient applied too late, as at that time the different humors were so cloudy as to render it impossible, by the ophthalmoscope, to locate the foreign substance.

II. The second case was that of a staphyloma projecting from the cornea of a colored child, aged 12 years, who, three months previously, had suffered from a Keratitis suppurativa, resulting in repeated corneal perforations, adhesions of the iris, and the existing staphyloma, which is of the size of a large grape. In this connection the enormous enlargement of the lachrymal gland is to be noticed as a curious fact. By slight eversion of the upper lid it protrudes itself into view, being six to eight times larger than in its normal condition. The

increased flow of tears is also very marked. The staphyloma was removed by taking a V-shaped piece from the growth. The first cut was made by the Beer knife, transfixing the tumor and then cutting outward; then, firmly grasping the part with a pair of forceps, the second division was made by the scissors, and strong pressure was brought to bear by a bandage on the eyeball, causing the two surfaces to be brought into juxtaposition.

[Six days afterwards the wound was healed. The lachrymal gland had returned to its normal size, and no doubt the staphyloma had been acting as a foreign body, and so causing the hyperæmic condition of the gland.]

III. The third case was that of a cataract occurring in a man aged 45, caused by a splinter of steel penetrating through the cornea into the lens one year ago. This was followed by the formation of a cataract, having a hard nucleus with soft cortical matter. This cataract was extracted by Von Graefe's linear extraction method. The lecturer remarked: In this connection, a few remarks on this method, and its real value in comparison with the corneal flap extraction, may not be inappropriate. I may add that during the winter and spring of 1868 I had the good fortune to see, at Von Graefe's clinic in Berlin, at least fifty cases of extraction by this method, and from my notes and observations made at that time I have condensed the following:

Prof. Von Graefe divides his operation into four distinct stages.

1. The incision. This should be so made as, in its passage through the eyeball, to form a tangent with the cornea at its sclerotic border. The outer part of the wound-track will fall in the sclerotic coat, but the inner two-thirds should fall in the cornea, where it is overlapped by the sclerotic coat. For this purpose a long, narrow knife is used, which enters the sclerotic coat at a point one-third to one-half a line from the corneal border, and directed towards a point slightly inward from the centre of the anterior chamber. The knife, directed towards this point, is now pushed forward until it has buried itself in the anterior chamber to a depth of  $3\frac{1}{2}$  to 4 lines; then, depressing rapidly the handle of the knife until it has become horizontal, the blade is advanced to form the counterpuncture at a point in the sclerotic equally distant from the cornea as the puncture, the distance between the puncture and counter-puncture being four and a half to five lines. The knife is then to be rotated obliquely forwards, and pushed on, until its length is almost exhausted; and then, by drawing it carefully backwards and forwards, the cut is completed. The knife now lies beneath the conjunctiva, which should be so divided as to leave a flap of conjunctiva at least one line in height.

This cut has been called a linear one. Strictly speaking, it is not. (See cut:  $ac$  = length of cut;  $bd$  = flap-height.) A flap having a height of about one millimetre is really formed, or the height of the flap is in proportion to the length of the cut as 7 is to 100,— $bd : ac ::$

7 : 100,—the greatest flap-height being where the knife enters the sclerotic coat.

2. The second stage of the operation is the iridectomy, which is rendered necessary by the extreme peripheral position of the

cut, as a prolapse of the iris would be inevitable. For this purpose the conjunctival flap is turned aside with a pair of small iris forceps, and then, seizing the iris, so laid bare, with the forceps, and holding the scissors parallel to the wound, by several successive snips the iris is divided,—taking care to hold the iris moderately tense until the division is completed. At this point great care should be taken to leave no portion of the iris in the wound. With this end in view, Von Graefe's vulcanite spoon is taken, placed on the eye, and gently passed from the angle of the wound towards the centre of the cornea; and, if not successful in this way, repeated tappings over the outer angle of the wound will often cause the iris to contract and resume its normal position; or if it happens that a small portion of the iris is found in the incision, this may be gently replaced by a silver curette. The size of the iridectomy depends very much on the size of the cataract; as a rule, a medium iridectomy is sufficient.



3. The third stage of the operation is tearing the lens capsule. This is done by Von Graefe's cystotome, making three incisions,—one passing along the outer pupillary edge, the second extending along the inner pupillary border, and both extending from the lower edge of the pupil up to the wound. The third cut traverses the capsule in a line with the incision.

4. The fourth stage is the removal of the lens. This is done by a vulcanite curette placed on the margin of the cornea opposite to that of the wound, and by a sliding motion backwards and forwards, some pressure being exerted backwards and upwards at the same time, the lens is made to present itself at the wound,—when the pressure is made directly backward, to fully engage the lens in the wound; then, by a gentle upward pressure, the lens is removed. This may be accelerated by gently pressing the edge of the incision backward by a curette, especially if the lens shows a disposition to move behind the wound.

Any loose cortical matter that may be left is easily removed by the forefinger being placed on the lower lid, and so gently rubbing the cornea by the lid, some slight upward pressure being made at the same time.

*After-Treatment.*—The eye is gently closed, and the hollow space at the internal angle filled with finely-picked charpie. Over this a bandage, made of very elastic flannel, is laid, passing around the head and under the ear, with three turns over the eyeball, each one exerting slight pressure, to render the eyeball immovable. This bandage is renewed every 24 hours. Atropine is applied only after the second or third day, at which time, if the case has progressed favorably, the wound will be found closed, and on the fourth day the patient is allowed to leave the bed. Any ciliary pain that may arise during this time is relieved by hypodermic injections of morphia, of one-fourth to one-eighth grain. Such, as briefly as possible described, is Von Graefe's linear extraction. Now let me add a few words as to its advantages and disadvantages as compared with the corneal flap extraction.

*Advantages.*—1. Much less frequent loss of vitreous humor, from the fact of the wound being so much smaller, and because gaping of the wound, which depends on the height of the flap, is by this operation reduced to a minimum. In 230 cases reported by Von Graefe, vitreous humor was lost in only nine.

2. The large conjunctival flap unites very quickly, often in a few hours, and then acts as an air-tight dressing for the sclero-corneal wound, hastening its union, and so lessening the danger of suppuration of the edge of the wound.

3. The lens is removed without traction of any kind being employed, and so lessens the danger of iritis.

4. The confinement to bed is much shorter, being about one-half that of the flap operation.

*Disadvantages.*—1. The increased difficulty of the operation; as, for example, in the incision, where the direction of the knife is changed three distinct times, rendering the cut more difficult to make.

2. The increased frequency of secondary cataract after the linear extraction.

The prognosis of the linear extraction is better than that of the flap, Von Graefe losing by the old flap operation five per cent. of his cases, and by the linear cut only two and one-half per cent.

*Choice of Position for the Operation.*—The upper incision presents the least deformity afterwards, but has the disadvantage of being more difficult of execution than the downward incision. Both have their warm supporters, Professor von Graefe much preferring the former.

## JEFFERSON MEDICAL COLLEGE.

OPHTHALMIC CLINIC OF DR. R. J. LEVIS.

NOVEMBER 5, 1870.

CONGENITAL ABSENCE OF BOTH UPPER EYELIDS.

OPERATION FOR THE RESTORATION OF THE LID OF ONE EYE.

Reported by Dr. L. H. Adler.

THIS case is of extreme interest, as it appears to be one without a recorded precedent. Various congenital deformities of the eyelids have been noticed, particularly such as

adherence of the lids at their ciliary margins; adhesions of the inner surfaces of the lids to the eyeball; a cleft in the lid, somewhat resembling that of hare-lip; an unnatural shortness of the upper lid, so that the eye cannot be closed; and a congenital turning in or turning out of the lids. I am, however, unable to find a recorded case of congenital absence of the upper eyelids, unassociated with monstrosity or other extreme deficiency of development.

In this case both eyeballs are without the protection of the accessory appendages of upper eyelids. The lower lids are in every respect normal, and the other features are well developed. The outer and inner canthi are perfectly formed, and a vestige of development of an upper lid exists in a little horizontal projection from each outer canthus, containing a few cilia.

The child, a male, is aged sixteen months, and is in all other respects well developed and healthy. The deficiency of the upper eyelids was noticed at birth, and, a few days after, the eyes, as would be expected, became much inflamed from exposure to the desiccating and other irritative influences of the atmosphere. There is a continuity from the integument of the forehead down to the edge of the orbit, and a thin veil of the skin is blended with the conjunctiva and is lost on the upper part of the cornea. The cornea still retains an imperfect translucency, so that the iris cannot be seen. The child is evidently able to notice the passage of objects before its eyes, and keeps its fingers playfully in motion before them. There is even some intolerance of light when sudden transitions are made.

The object of the proposed plastic operation is to cover the eyeballs for protection, so that the cornea may regain its transparency and the staring unsightliness of the disfigurement be relieved.

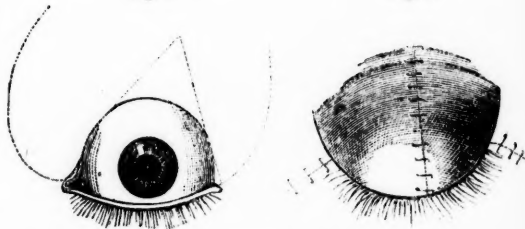
In devising a plan for the operation, it is desirable, as some of the peripheral fibres of the orbicularis muscle exist, that their action may be retained for the newly-formed lid. It is also assumed that the occipito-frontalis muscle will eventually assist in the elevation.

Flaps of integument were made from each side of the orbit by incisions in the direction of the dotted lines in outline figure 1.

These flaps, when adjusted over the eye, and the gaps produced by their removal closed by sutures, presented an appearance as represented in figure 2.

Fig. 1.

Fig. 2.



From the success of the operation, as judged of immediately after its performance, it was evident that the eye would be protected by a lid having some power of motion, and the appearance of the face be improved.

*TREATMENT OF METRORRHAGIA.*—M. Dupierri (*Union Médicale de la Gironde*, Feb.; from the *Practitioner*, July, 1870) recommends iodized solutions, by injection, in the hemorrhages that occur after childbirth, and also as a means of preventing the access of puerperal fever. This remedy produces an excitation of the internal surface of the uterus, which tends to make it contract. It thus aids the uterus in expelling clots, but does not, like the perchloride of iron, act as a direct haemostatic, or cause the formation of small clots in the mouths of the vessels, which are apt to act as foreign bodies and may become the source of various accidents. He clears out all clots from the interior of the organ, and then injects, with considerable force, a solution of one part of tinct. iodine to two of water and a small proportion of the iodide of potassium. The uterus quickly contracts, and the lochia are sparing and free from bad smell.

## THE MEDICAL TIMES.

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TUESDAY, NOVEMBER 15, 1870.

## EDITORIAL.

## TO OUR SUBSCRIBERS.

IN our last issue we announced that all future numbers of THE MEDICAL TIMES would contain twenty pages of text. This change has been necessitated by the gratifying and steadily-increasing pressure of valuable material for publication, whilst it is more than justified by the rapid increase in the list of subscribers.

The articles already published attest the sincerity of the promises of support which we received from many eminent writers; and we can even now point with satisfaction to the realization of our hope of making this a truly representative journal. With the increased space at our disposal, we shall be able to render several of our departments much more complete and full; and we trust that, through the arrangements that have been perfected for securing the earliest notice of all important movements in the army medical service, full reports of the transactions of several influential and active societies, and frequent notices of the most interesting points in the hospital and clinical services of the city, THE MEDICAL TIMES will in the future still more highly merit the flattering support already extended to it.

## THE UNITED STATES PHARMACOPEIA.

IT is evidently a trite proposition that there are few things of more importance to the medical profession than the official Pharmacopœia or standard list of medicines and preparations; and, as the commencement of another decade has brought the subject again before the American medical public, we conceive that it is well worthy our editorial space. Some of the oldest members of our profession doubtless still remember the birth of our national standard; but to most it is probably unfamiliar, and therefore it seems best first to give a sketch of its history, whilst in a second article its present and future will afford a topic for comment.

Up to 1820 there had been no recognized standard in the United States, nor, indeed, any work which offered itself as such. It is true that in certain districts endeavors had been made to regulate the preparation of medicines, and the Pharmacopœias of the Massachu-

setts Medical Society and the New York Hospital had exerted a limited influence in their respective circles, but they were strictly local in origin and aim, and were by no means supreme, even in their immediate neighborhoods. The constant annoyances and disasters arising from this want of a common standard can well be imagined; and, as the number both of doctors and druggists increased and the intercourse between widely separated communities grew more close and frequent, this state of affairs became more and more intolerable. As early as 1814, Dr. Coxe, in the preface to the third edition of his Dispensatory, proposed the formation of a national Pharmacopœia; but it was not until 1818 that the New York Medical Society, at the suggestion of Dr. Lyman Spalding, made an official proposition, which was received and acted on with warm approbation throughout the country. In accordance with this, the United States was divided into four districts,—Northern, Middle, Southern, and Western; and in each of these a convention was directed to be held. It was, however, only in the Middle and Northern sections that the meetings actually occurred and manuscript Pharmacopœias were prepared.

The latter, at a subsequent general convention, held in Washington, were compared, and out of them was formed a national Pharmacopœia, which was published in Boston, 1820. The reception of this book by the press was not at all flattering, and there can be no doubt that it deserved a large portion of the obloquy freely heaped upon it. The journals of the day are singularly in agreement in their denunciations of the work and of "the gross incompetency or gross negligence of the editor or editors," loudly calling upon them and their co-workers in the convention to buy up and suppress, at their own expense, "the whole impression, that not a copy may reach the European shores." It is not worth while, at this date, to dwell upon the innumerable faults in the work, yet we cannot forbear mentioning one as an example: thus, *aqua potassa* is the name given without distinction to two preparations,—the one a strong solution of caustic potash, the other a solution of carbonate of potassa!

There were, however, some apparently original excellencies, which have been preserved through subsequent editions. It had previously been the custom to arrange medicines in Pharmacopœias in accordance with some real or supposed analogy in their nature or action, and to give precedence to the most important; but in this work the alphabetical order was adopted.

Again, the prevailing complex nomenclature was replaced by a much simpler and briefer one. Thus, *assafetida*, in the Pharmacopœia of the Edinburgh College, was known as *Gummi resine ferrule assafetide*, whereas *Assafetida* was the short and equally exact title substituted.

The most useful act, however, of the convention of 1820 was the devising a plan for the future revision of the work, in accordance with which the president was instructed to issue writs of election, in January, 1828, to the several incorporated State medical societies



and incorporated medical colleges, requiring them to ballot by districts for three delegates to a convention to meet in Washington in 1830. Owing to the hope that the revision might afford a more worthy standard, even the Pharmacopœia of 1820 was, to a great extent, accepted by the profession.

On the 4th of January, 1831, the second convention met, and finally adopted a manuscript copy of a revised Pharmacopœia prepared by Drs. George B. Wood and Franklin Bache as the basis of the new work. This copy was referred to a large committee for final revision, and, after some slight alterations, it was again referred to a sub-committee for final action. This committee consisted of Drs. Hewson, Wood, and Bache, and under their supervision the book was at last published. It was a work of vital importance to the professional welfare. An acceptable Pharmacopœia was a necessity for further progress. The first had been an acknowledged failure, greeted with scorn and derision. If this met a similar fate, the danger was great that the enterprise would be abandoned.

More than this,—opposition had already sprung up, so that there was a further danger that, if the regular revision were of but moderate excellence, two Pharmacopœias would be in existence, recognized in different localities, and the road be entered upon which would lead to the anarchical condition of every large town or petty medical centre having its own distinct Pharmacopœia. Of this opposition Pharmacopœia we have been unable to find a copy, but its history appears to be as follows: Two, or perhaps three, gentlemen met in New York, elected a president and secretary, and then adjourned for five months, directing that, as none of the Western and Southern States were represented in the first meeting, circulars should be sent in the mean while to each of the medical societies and medical institutions in those States, requesting delegates to the second session. At the time appointed, the second gathering met. In it were included one gentleman from Charleston, South Carolina, one from Cincinnati, two from Yale College, one from Berkshire Medical College, and five resident physicians of New York, which latter city, as a reviewer naïvely remarks, was thus fairly balanced against the rest of the United States. It was the work of this convention that was published in 1830 in New York, with the title, "The Pharmacopœia of the United States of America; by the authority of the General Convention."

Fortunately for the profession, the quality of this book was scarcely better than its honesty. Full opportunity was therefore afforded to hostile criticism, and this was quickly embraced by Dr. George B. Wood, who administered a *coup de grace* in a long, scathing review in the *North American Medical and Surgical Journal* for 1831,—a review whose bitter and humorous irony is exceedingly well carried out, and contrasts strangely with the better-known dignified style of its now famous author. The hand which was the chief in building up the Washington revision, whose excellence soon became universally recognized, proved itself in this equally

skillful in tearing down its bastard rival. In order to insure the permanence and authority of the United States Pharmacopœia, and with no idea of the pecuniary success which it has achieved, the United States Dispensatory was soon afterwards published by its authors, and American pharmacy, to the astonishment of many, leaped at once, as it were, into the arena fully armed, and prepared to maintain the foremost rank, which it has ever since held.

From 1830 to the present time the history of our Pharmacopœia has been that of the regular decennial meeting and subsequent revisions, and affords nothing necessary to be noted here; and we leave, therefore, the history of the past, expecting in a future number to speak of the present and the future.

#### SMALLPOX ON BOARD OF THE FRANKLIN.

THE Washington correspondent of the *New York Tribune* stated, September 1, 1870, that the Fleet Surgeon of the European Fleet reported to the Navy Department, August 8, that the United States ship Franklin, the crew of 597 men being in good health, sailed from Lisbon for Flushing June 18; that on the 26th a man, who had not been out of the ship at Lisbon, and who had an excellent vaccine cicatrix, was admitted to the sick-list with fever, which proved to be smallpox. On the 17th of July, nineteen days after the seizure of the first, a second case occurred, which was immediately sent to the quarantine hospital at Flushing. On the 18th seven, and on the 19th sixteen, cases were sent on shore, and the ship was placed in strict quarantine. July 25 the number of cases reached 58. None occurred subsequently. The ship was released from quarantine August 2.

Rear-Admiral Radford, in a letter to the Department, dated Flushing, August 8, especially calls the attention of the Secretary to the praiseworthy conduct of Surgeon Turner, in hastening to the relief of the sick and assiduously devoting himself to their care and comfort. The Secretary thus recognizes the surgeon's services:

"NAVY DEPARTMENT, WASHINGTON, Aug. 31, 1870.

"SIR,—The Department has received and noted with great pleasure the special reports of Rear-Admiral Radford and of the Fleet Surgeon of the European Squadron, in relation to your very meritorious and valuable conduct and services during the prevalence of the smallpox among the crew of the Franklin, while lying at Flushing, Holland. The devotion exhibited by you in leaving the routine duty of your own ship and volunteering for this important and dangerous duty, and your marked attention and efficiency in the discharge of it, deserve and will receive the sincere commendations of the service and of the country; and in such conduct and devotion is found the true glory of your profession and the highest dignity of its members. You will please accept herewith the thanks of the Department and the assurance of my personal appreciation and regard.

"Yours, very respectfully,

"GEORGE M. ROBESON, *Secretary of the Navy*.

"Surgeon THOS. J. TURNER, *U. S. Navy, U. S. Steamer Juniata, European Fleet.*"

Prompt recognition of the meritorious conduct of men employed in military service by the civil head of

its administration is inspiring, and always satisfactory to them. To voluntarily risk life by exposure to the contagion of a loathsome and fatal disease for the purpose of rescuing its victims from death, or to sustain their hope, while suffering, by cheering words of sympathy, implies a courage no less sturdy and worthy than that which gives glory to him who leads or follows in the fight. Merit of this sort is not commonly acknowledged. Perception of it flows from a cultivated and refined intelligence; recognizing and inviting public attention to it evinces a degree of kindness and justice as well as of statesmanlike policy; but such official acknowledgment might well exceed the limits of mere compliment at a time when controversial relations exist between "the line" and "medical staff" of the navy, injurious to that spirit of brotherhood which should bind together men associated for a common purpose.

The just though long-pending claim of medical officers to a suitable rank in the naval service, in connection with their official degradation under the administration of the navy department by the Hon. A. E. Borie, renders the Secretary's letter to Dr. Turner especially noticeable. Mr. Robeson says:

"The devotion exhibited by you in leaving the routine duty of your own ship and volunteering for this important and dangerous duty, and your marked attention and efficiency in the discharge of it, deserve and will receive the sincere commendations of the service and of the country; and *in such conduct and devotion is found the true glory of your profession and the highest dignity of its members.*"

The praiseworthy conduct of medical officers in the discharge of their duty, which has cost many of them their lives, has been urged in support of their claim to a suitable rank. The words we have placed in italics imply that the true glory of the medical profession and the highest dignity of its members consist in self-sacrifice and devotion to the interests of others, and that when they achieve the highest degree of worthiness, and stand conspicuous in the true glory of the profession, their only reward should be an honorable mention of their conduct. In the opinion of the Secretary, the conduct of Surgeon Turner is worthy of the "commendations" of the naval service; but he also seems to think that members of the medical corps of the navy should be content to win such "commendations," and not aspire to more substantial acknowledgment of any achievement worthy of general approbation, thus imposing on them a practical application of the aphorism, "Virtue is its own reward."

A comparison of the Navy Registers of two years may enable us to estimate the value of the "sincere commendations of the service" to medical men in it.

In the Navy Register of January 1, 1869, the name of Thomas J. Turner, of Pennsylvania, is enrolled twenty-first on the list of "surgeons ranking with commanders;" and in that of January 1, 1870, it is placed below all the commanders and all the lieutenant-commanders, thirteenth on the list of "surgeons ranking with lieutenants."

This sweeping degradation in rank of Dr. Turner,

and of all other medical officers, was accomplished through the representations and agency of officers of the line of the navy, whose "sincere commendations," the Secretary suggests, are reward enough for any efforts a surgeon may make to preserve the health and prolong the lives of the very men who are banded together not only to humiliate him in his own estimation as well as in that of the naval service generally, but also to prevent any legal recognition of the claims of medical men to a positive rank or relative position in the officiality of the navy. The Secretary estimates the praise of the line of the navy at a much higher value than it is intrinsically worth to gentlemen who are frequently made to feel the offensiveness of polite condescension and the arrogance of superior caste—not of mere official superiority—by their comrades in a perilous service.

The tone of this communication to Dr. Turner, kind and graceful as it is and was designed to be, in recognizing his merits, is calculated to foster the caste prejudices of the line against the staff. We notice, too, that the fleet surgeon of the European squadron has no more individuality than "the man on the lookout" or the ship's cook, although his report in the case is as authoritative as that of the commander of the squadron, who is conspicuously named.

May we hope that Congress, early in its approaching session, will enact some measure calculated to remove all reasonable grounds of difference on the question of rank of medical officers in the navy, as well as to retrieve for medical service in the navy its lost popularity? Until the question is definitely settled, it will be difficult, if not impossible, to fill the many vacancies in the medical corps with physicians properly qualified to be intrusted with the care of officers and men in the naval service when prostrated by disease or wounds.

THE army correspondents of the London *Lancet*, *Medical Times and Gazette*, and other serials, seem to have had a difficult task to answer the expectations of their employers, and to gratify the popular demand of the profession for fresh information from the battle-fields and hospitals of France. One of these journals has had five of these itinerant seekers after novelty picking up notes of the war from every ambulance met with in their peregrinations, and from every hospital to which they succeeded in gaining access; and yet there is a general complaint of the infrequency and insufficiency of their letters. One or two of these gentlemen were compelled to waste time and money in Paris, endeavoring to become connected with somebody's or anybody's army corps, and, when successful in this preliminary step, were placed on professional duties so engrossing that they could find but little time for correspondence. Then they found that all the acceptable cases either never reached them or passed them by, or, perhaps, were transferred elsewhere just as they were becoming interesting, so that their history could not be studied to a successful or a fatal issue. Some of them tried to get casts of cases and faces with

plaster of Paris, but it would not "set," although it had been sent to the hospital for the treatment of fractures. To add to all this, the medical attendants were suffering most of the time from deficiency of food.

## CORRESPONDENCE.

### LETTER FROM WHEELING, W. VA.

FROM JAMES E. REEVES, M.D.

WHEELING, October, 1870.

THE city of Wheeling, which I wish to introduce to the readers of the *TIMES*, is a flourishing but smoky place, with twenty thousand inhabitants and numerous manufactories; nineteen regular physicians and surgeons, two eclectics, four homœopaths, including one female votary, and one water-cure doctor, who, as a successful money-changer and man of science (!) in the temple erected to the Unknown God, is perhaps not less respectable and useful to suffering humanity than his more presumptuous co-worshippers, the homœopaths, so-called eclectics, mesmerisers, spiritual rappers, *et id genus omne*.

I have said Wheeling is a smoky city; and the remark is so true that strangers coming into it (unless they come from Pittsburgh, ninety-one miles farther up the Ohio River) are quite sure to make the mistake in thinking every day is going to be rainy, until they have remained long enough to learn that the murky, sooty atmosphere, which is sometimes so disagreeable when the many furnaces are in full blast and the air still, is the faithful representative of the business prosperity and wealth of the city; and, high above all, that it is not in any wise detrimental to health, as is unmistakably shown by a remarkably low death-rate, and the comparative infrequency of pulmonary affections.

In 1869 the total mortality, including still-born, amounted to 279,—a smaller number than had been recorded in any one of the eleven years next preceding; and for the nine months ending September 30, 1870, there was the small *total*, including premature and still births, of 207, the average monthly mortality being 23, or a fraction above 13 to every 1000 of the population annually. Indeed, the death-returns for the past eleven years show conclusively that with the growth of the city and the yearly increasing number of manufactories there has not been a corresponding increase in the deaths from consumption. For example: in the year 1854 there were 45 deaths reported from this cause; in 1855, 51 deaths; in 1856, 58 deaths; in 1861 (a skip of four years), 41; in 1862, 36 deaths; in 1863, 35 deaths; in 1864, 37 deaths; in 1865, 37 deaths; in 1866, 29 deaths; in 1867, 34 deaths; in 1868, 36 deaths; in 1869, 30 deaths; and in 1870 (9 months), 18 deaths.

This statement is in happy contrast with the returns from the manufacturing districts in England, Ireland, Scotland, and Wales; and the difference is scarcely less apparent when compared with the returns from New England manufacturing towns. The mortality from the disease in Wheeling is even less than occurs in the most salubrious country districts of the State,—in a word, the city is healthier in this respect than the country.

A little less than two years ago, a permanent Health Office was created, and a wise and most praiseworthy encouragement has since been given by the municipal authorities to the en-

forcement of sanitary measures. By a humane and liberal policy, the people generally have become interested in, and learned something of, the economic and political importance of the study of *preventive medicine*; and all classes have enjoyed, in return for their discipline, a wealth of health not exceeded, I believe, by any city of the same size in the United States.

Another of the diseases which is neither so frequent nor so fatal as it was in past years—say fifteen or twenty years ago—is croup. Knowledge of the marvellous virtues of *hydrargyri sulphas flava*, if generally diffused, might account for the diminished mortality, but certainly not for the late *infrequency* of the disease. In 1856, when diphtheria was generally prevalent in Wheeling, and pretty well recognized by the profession, the number of deaths from croup was fifteen; since then the annual mortality from the disease has varied from one to seven. Last year but one death was reported from this cause, and but a single case has occurred thus far in 1870.

In my early experience in the practice of medicine I saw more or less of the disease—*genuine* croup—every year; now it has become such a stranger that I wonder what has become of it and what has produced the change. It cannot be said to have been supplanted by diphtheria, as was the old-fashioned "bilious remittent fever" by the enteric or typhoid form since 1832; for the two diseases diphtheria and croup, which are unlike in many essential particulars, have figured at about the same small rate in the mortuary returns during the last five or six years; though in everyday practice it has at least been my own experience that diphtheria is far more commonly met with than croup. And, further, I have found that the former is almost as manageable by the use of the chlorine and iron mixture (℞ Chlor. pot., ʒij; Acid. Hydrochloric., ʒiss; Aquæ, ʒvij; Tinct. ferri chloridi, ʒi. M.) as a gargle or atomized spray, every hour or two when the patient is awake, as well as internally administered in teaspoonful doses every three hours, with the addition, if need be, of sulphate of quinia, a good diet, and the recumbent posture, as croup has been declared to be by *turpeth mineral*—or the wasting disease of infants by *unctions* of cod-liver oil and the internal use of subnitrate of bismuth—notwithstanding the assertion once made by a self-styled and very doubtful oracle that "the mother is a fool who would subject her child to such filthy treatment." Of course, Eustace Smith's excellent book had not then been heard of, nor poor, starving, wrinkled, withered infants been rescued from the grave by the almost magical influence of this greasy mode of treatment; therefore "the times of such ignorance" should be winked at.

The medical profession of West Virginia is slowly moving into successful working line. In 1867, as the result of the labor of a few individuals, a State Medical Society was instituted at Fairmont, and has gone on prospering in spite of very adverse winds. It now embraces a majority of the best men in the State, and will live to amply reward its industrious Fellows. Auxiliary to the State Society, and to cover a blank which had unfortunately existed for several years, the "Wheeling and Ohio County Medical Society" was established in 1868, but, notwithstanding its county name, is yet composed entirely of city members. It, too, has had its singular trials and remarkable experiences, but is gradually overcoming their effects and doing lasting good in the way of levelling up and levelling down, as the individual case requires.

I am sorry we cannot boast of a becoming public charity



for the sick poor. The city has nothing of the kind in keeping with either the intelligence, wealth, or accustomed liberality of its citizens; and but for the benefits presented by the Wheeling Hospital,—a private enterprise, under the direction and good management of the Sisters of Charity,—we should have the discredit of being without even the name of such an institution. A new county almshouse, situated six miles from the city, is now being erected, and will, when completed, prove a godsend to the poor of both county and city; but it will not by any means (though we have to pay seven-tenths of the bills) fill or accommodate the severe want of a city infirmary, nor of a house of correction for the government of the almost incorrigible boys and girls that are running at large in the streets and to ruin. The Insane Asylum at Weston, a State institution, one hundred and twenty miles south of Wheeling, and upon which have already been expended enormous sums of money, is not yet completed, and probably will not be finished for several years to come, for which reason there are many insane persons at present confined in the narrow, dismal cells of the various county jails throughout the State, and treated as felons! Even in the city of Wheeling there are now confined in wretched prison-cells three or four of these unfortunate people, of both sexes. Surely, sentence to the State prison at Moundsville would be a thousand times more humane disposition of them.

## TRANSACTIONS OF SOCIETIES.

### PHILADELPHIA COUNTY MEDICAL SOCIETY.

CONVERSATIONAL MEETING held September 28, 1870, at 8 P.M. Dr. Wm. H. Pancoast, President, in the chair.

In reply to an inquiry as to the relapsing fever which has been prevalent in the lower section of the city, Dr. Welch (attending physician of the Municipal Hospital) remarked, "Since I have had charge of the hospital, now about one month, twenty-five cases of this fever have been admitted. During the summer some hundreds of cases were treated by my predecessor. The vast majority have been from the southern section of the city and from the squalid poor. As they present themselves, they are in all stages, from the inception of the fever to the relapse. We find, on inquiry, that they have been suddenly attacked with a chill, followed by fever. 'This first stage, or that of the first pyrexia, continues about one week, during which the pulse varies from 90 to 140. The tongue is heavily coated in its centre, with clean, red edges and tip. This coating is white and moist at first, but as the disease progresses it becomes yellowish, and sometimes brownish. I have rarely found well marked that clean triangular space at the end of the tongue, which has been described by some authors.

"A yellowish hue of the skin and of the white of the eye is sometimes observed in white patients; but in negroes I have found well-marked yellowness of the eyes uniformly present.

"Irritability of the stomach and epigastric tenderness are frequently seen. Tenderness over the region of the spleen is common. Muscular pain is a very frequent attendant, especially about the neck and shoulders.

"The skin is hot and dry at first, but from twenty-four to forty-eight hours prior to the cessation of the pyrexia, a profuse perspiration generally occurs. The pulse now falls suddenly to its normal standard, or even below.

"This second stage, or intermission, continues about one week, the patient being free from fever; the tongue is clean, appetite returns, he walks about and believes himself convalescent. But on or about the fourteenth day from the onset of the disease, all the symptoms return, though in a milder form.

"This third stage, or relapse, does not last, on an average, more than three days. The intermission again occurs, and

convalescence rapidly ensues. Another relapse may occur, but, in my experience, this is not frequent.

"The negro is much more profoundly impressed by the disease than the white, and the mortality is correspondingly greater. With my limited experience, I do not feel myself able as yet to diagnose the affection with certainty in its earliest stage. There are certain circumstances which may suggest the nature of disease, as the residence, the heavily coated tongue with red tip and edges, and the muscular pain; but the relapse is, above all, the distinguishing symptom.

"I have had two deaths, both negroes. In one an autopsy was obtained. He died under circumstances somewhat indicating yellow fever. A few hours before death, he vomited a black grumous matter, and was without pulse at the wrist, though able to sit up. Soon this black vomit largely increased. Drs. E. Harris, of New York, and R. La Roche, of Philadelphia, were present at the examination. The liver was somewhat fatty, and was believed to be a 'whiskey liver.' The stomach was congested, and the spleen enlarged, weighing eleven ounces. This, with his history, and the absence of the lesions of the liver and stomach found in yellow fever, sustained the diagnosis of relapsing fever.

"The treatment has been simple,—a febrifuge of solution of acetate of ammonia, with spirit of nitric ether and antimonial wine, turpentine when the tongue was dry, and stimulants if required. In the intermission, quinine only as a tonic. In a few cases, where there has been much jaundice, I have used calomel with benefit."

Dr. A. Douglass Hall inquired as to its resemblance to typhoid. He had seen one case in consultation, which at first sight reminded him of a mild typhoid.

Dr. Welch had not been so impressed. The absence of diarrhoea and nervous disorder, the typhoid tongue, iliac tenderness, and tympanites, excluded the idea of typhoid fever.

Dr. Atkinson asked for the differential diagnosis between relapsing fever and a severe case of bilious remittent.

Dr. Welch.—"The more persistent bilious vomiting, and the remissions and exacerbations every day or every other day, characterize bilious remittent, while relapsing fever pursues the course above detailed."

Dr. Buck had seen a number of cases in the southern part of the city. He had noticed violent headache, and great irritability of the stomach. The relapse occurred on the seventh and fourteenth days; in the latter case it was very severe. He paid great attention to nutrition, employing injections of beef tea, with pepsin and dilute muriatic acid, when the stomach was very irritable. He relied greatly on quinia. He had lost no cases. In conversation with Drs. W. Pepper and Shapleigh, he had been informed that they found small yellowish deposits in the parenchyma of different organs.

In this connection he would mention a singular case, which proved not to be relapsing fever, where at twelve o'clock nearly every night the patient, a boy seven years old, became insane; the insanity would pass off in the morning. At the end of two weeks death ensued. The bowels were regular, appetite good, no cough, no tympanites. He thought it a case of malarial fever.

Dr. Atkinson, though constantly attending cases throughout the infected district, had not seen a case of true relapsing fever. He had encountered several cases of fever which presented symptoms indicating such an attack, but were of an ephemeral nature, none lasting more than two or three days, and none suffering a relapse.

He mentioned a case which had just occurred in close proximity to the recent cases of yellow fever. It was marked by profuse epistaxis, frequently renewed, intense cephalalgia, great muscular pain and prostration, but with complete intermissions in the febrile movement. The patient rapidly convalesced under the exhibition of antiperiodic doses of quinine.

Dr. Fish narrated two cases, which tended to establish the contagious character of relapsing fever. He would ask Dr. Welch if his experience and observation at the Municipal Hospital had confirmed the contagiousness of the disease.

Dr. Welch had seen no case directly traceable to contagion.

Dr. Wittig made some remarks in regard to the fact that in many morbid conditions there is a tendency to occurrence of a relapse, soon after the primary attack, on re-exposure to the exciting cause.

## OBITUARIES.

THE cause of Chemistry in London has recently suffered from the loss by death of two of its most distinguished exponents. DR. WILLIAM ALLEN MILLER, LL.D., F.R.S., Professor of Chemistry in King's College, died early in October, at the age of 52. He was a pupil of Liebig in his younger days, and, after being for several years assistant to Prof. Daniell, succeeded him in 1845 in the Professorship. His "Elements of Chemistry" passed through three editions. At the time of his death he was Vice-President of the Chemical Society, Treasurer and Vice-President of the Royal Society, Assayer to the Mint and Bank of England, etc.

DR. AUGUSTUS MATTHIESSEN, F.R.S., F.C.S., Lecturer on Chemistry at St. Bartholomew's Hospital, was found on the 6th of October seated at a table in his laboratory, with a bottle of prussic acid and another of urate of ammonia near him, with which he had probably been experimenting. He seemed to be asleep, but had doubtless been dead several hours. He was only forty years of age, but, though young, had distinguished himself by numerous valuable researches on specific gravity, effect of temperature on electric conducting power, etc., for one series of which he received the Royal medal. He elaborated experiments leading to improvements in copper wire for telegraphic purposes, especially for submarine use. He was also successful in his inquiries in the more profound fields of organic chemistry. He proved, among other results, that when morphia and codeia are acted upon by hydrochloric acid, a new base, called by him apomorphia, is formed, which is a very decided emetic.

## REVIEWS AND BOOK NOTICES.

OPPOLZER'S VORLESUNGEN ÜBER SPECIELLEN PATHOLOGIE UND THERAPIE. Bearbeitet und herausgegeben von DR. EMIL RITTER VON STOFFELLA, emeriten klinischen Assistenten und Privatdocenten an der k. k. Universität in Wien, etc. Erlangen, Verlag von Ferdinand Enke, 1868. (Oppolzer's Lectures on Special Pathology and Therapeutics. Prepared for publication and edited by Dr. Emil von Stoffella, Emeritus Clinical Assistant and Lecturer at the Royal Imperial University of Vienna.)

Prof. Oppolzer's reputation as a clinical lecturer is so deservedly great in Germany, that regret as well as surprise is excited by the fact that up to the time of the publication of the present work he has chosen to confine the benefits of his teaching in great measure to the medical class at Vienna. At this moment we cannot call to mind the name of any other physician equally celebrated as a teacher who has written so little. On this account it may be that Oppolzer is so little known in this country, or that his fame is at most a reflected one. In Germany, however, it is different, and any one who has followed for a winter, as has the writer of the present notice, his course of bedside instruction, will be only too glad to confirm the favorable opinion of his merits which is universal there. The book, only part of which has reached us, is, as the title tells us, *elaborated (bearbeitet)* by Dr. Stoffella, a gentleman who a few years ago occupied the position of clinical assistant to Prof. Oppolzer, and consequently has had abundant opportunities for becoming familiar with his views on pathology and his method of treatment. Dr. Stoffella, we are glad to say, has not neglected his advantages, and has shown himself well qualified for the performance of the duties of an editor. Having heard Oppolzer lecture, we are in a position to judge, at least in part, of the accuracy with which his lectures have been reported, and can truly say that, with the exception of the necessary elaboration they have received at the hands of the editor, they are very faithful transcriptions of the original. As much of the success of a teacher depends upon the manner in which he imparts his information, a written lecture will scarcely ever be quite so instructive as an oral one, and thus it may happen that the reader may fail to find in these lectures, admirably reported as they are, the charm which always crowds Oppolzer's lecture-room and wards. Still, we think

that any one who is master of the German language will derive from the reading of these lectures both pleasure and instruction, and will never regret the time so spent.

It is evident that the work when completed will be voluminous, and doubtless expensive. But three parts have reached us, and of these the first two, containing three hundred and seventy-four pages octavo, are entirely devoted to a consideration of Diseases of the Heart and Blood-Vessels, and the third breaks off abruptly in the middle of Diseases of the Lungs. The price of the work, as issued in parts, will probably prevent a general sale of it in this country; but, if the unpublished parts are at all equal to those in our possession, the whole will form a very valuable addition to a medical library.

Regretting extremely that the narrow limits assigned us do not enable us to give a complete review of the book, or to speak as much in detail as we should like, of the very admirable descriptions of diseases it contains, it is our purpose in the present notice to call attention to a few points, principally in diagnosis and treatment of diseases of the heart, which have struck us as novel. Prof. Oppolzer's method of handling his subject does not differ materially from that common among German authors, each subject being fully treated of by itself, and every disease examined in all its bearings,—the causes, pathological anatomy, symptoms, course, diagnosis, prognosis, and therapeutics being in each case fully discussed. It might and probably will be objected to this plan that it involves a good deal of repetition; and so it does; but there are counterbalancing advantages not to be overlooked. If required to indicate the best part of the book, we would unhesitatingly select the articles on the symptoms and differential diagnosis of the several diseases. The minuteness of the descriptions, which is certainly carried further than is often seen in the writings of either French or English authors, may, it is true, weary the general reader; but, on the other hand, we are sure their accuracy will delight the careful student and often afford essential aid to the practising physician. We do not find the evidences of quite so much familiarity with the works of foreign authors as we should have expected and should like to have seen. There are certainly not more than half a dozen references to English authorities, and about the same number to French.

The diseases of the heart and blood-vessels are of course very fully discussed,—endo- and pericarditis, hypertrophy and dilatation, valvular disease and aneurism, most fully so. As diagnostic signs of especial value in pericarditis, we find the two following,—extension of dulness to the left of the impulse, and a change of the seat of a murmur consequent upon a change of position on the part of the patient. Both of these signs are to be expected from the nature of the disease, and we can, of course, have very little doubt of their existence in most cases; but many works on auscultation and percussion do not call attention to them. No allusion, however, is made to the fact of the less frequency with which pericardial murmurs are propagated in the course of the large arteries than endocardial. The author evidently holds that the sounds of the heart are due to vibration of the valves, and, with Skoda, believes that there is an arterial first sound, independent of the cardiac, and due to the vibrations of the walls of the arteries. There are few among either practical or theoretical physicians at the present time who do not refer the production of the cardiac sounds principally to the vibrations of the valves; but we are not ready to admit that the explanation given by Oppolzer of the causation of murmurs will be quite so readily adopted. While it is held that regular vibrations of the valves and walls of the arteries give rise to sounds, their irregular vibration is said to be almost the sole cause of murmurs, and this sometimes even in cases in which the murmur is of the so-called obstructive character. Thus, in speaking of aortic constriction, the author says that very frequently the segments of the semilunar valves are, in consequence of thickening or induration, unable during the systole of the heart to apply themselves closely against the walls of the aorta, but assume a position perpendicular to the orifice, and are put into vibration by the blood as it flows past them. He admits that in those cases in which the valve is so rigid as not to be capable of vibration this explanation will not suffice, and assigns increased friction as, under these circumstances, the cause of the murmur; but the latter he evidently thinks a much less constant source than the

former. The frequent absence of aneurismal murmurs is satisfactorily accounted for, he thinks, by this theory. If the walls of an aneurism admit of regular vibrations, a sound is produced which may even be more intense than normal; and it is only in those cases in which the vibrations are irregular, or the aneurismal sac presses upon the artery, that a murmur is heard. The presence of a systolic sound in the small arteries is a very frequent accompaniment, and is regarded as a valuable sign of hypertrophy of the heart, indicating, as it does, increased vibrations caused by the exaggerated pressure of the blood in vessels the coats of which are generally themselves hypertrophied.

The metallic clang, which is another attendant upon hypertrophy or of an excited action of the heart, is attributed to the vibrations of the rib against which the enlarged or excited organ impinges. Great, perhaps undue, diagnostic importance is attached to the *accentuation* of the pulmonary second sound in distinguishing systolic murmurs originating at the mitral orifice and accompanied by regurgitation, from those simply dependent upon anæmia or upon loss of elasticity of the leaflets of the valve. He concedes, however, that an accentuation of the second sound over the pulmonary artery frequently accompanies an excited action of the heart, and is not uncommon in anæmia and chlorosis.

Less reliance than is usual is placed by Prof. Oppolzer upon the signs furnished by any one of the methods of physical diagnosis. Much care is evidently taken to impress upon the student how fallacious are the signs furnished by auscultation, for example, if not confirmed and compared with those obtained by percussion; and we do not recollect to have met with anything more admirable than the manner in which the whole subject of the differential diagnosis of valvular diseases is treated. Mitral disease, if the lesions are not very aggravated, is said to be compatible with long life and moderate comfort, more so than disease of the aortic valve,—an opinion which differs from that generally held on this point. We do not find the liability of the subjects of aortic incompetency to sudden death alluded to.

The treatment adopted in diseases of the heart and blood-vessels does not differ quite as much from that common in this country as might have been supposed, except in the use of digitalis. Unless we are in error, the view which is generally held here in regard to the action of this drug, in the doses ordinarily administered, is that it is tonic and stimulant. Oppolzer, however, adhering to the older view, looks upon it as essentially sedative in its operation, and cautions us against its exhibition in any case where there are positive indications of debility of the central organ of circulation, as it will, under these circumstances, occasionally accelerate death. He advises its use only when vigorous contractions, loud sounds, a full and strong pulse, and absence of lividity proclaim undiminished power. An exception in favor of its use is made in cases of aortic insufficiency complicated with contraction of the orifice. In such cases, even if the pulse be small, it may be given whenever the action of the heart is excited, as it has been demonstrated that less blood is regurgitated when the beats are reduced in frequency, and at the same time a due amount of blood is sent into the aorta at every systole. Digitalis is also recommended for the relief of hæmoptysis, as in this condition all remedies which reduce the force of the circulation will be of service.

The remedies most frequently employed in inflammatory affections of the heart or its membranes are cold, venesections, and quinia, the use of the last-named remedy being recommended in conditions in which we are told to avoid digitalis. Ice or cold dressings are to be used in the early stage of inflammations, and bleeding whenever there are evidences of venous congestion, or of increased pressure of the blood in the arteries, manifesting itself by the presence of high fever, pain in the head and breast, together with a feeling of oppression or want of air.

The operation of paracentesis of the pericardium is of course alluded to, but is scarcely recommended, and is not thought to present the same chances of a favorable result as the analogous operations in hydrothorax and ascites, and for the following reason. The pericardium, when distended, shows little tendency to contract, and, as the vacant space cannot be occupied by an expansion of the lungs, the blood-vessels of the sac are

deprived of the support to which they have been for a long time accustomed, and are very liable to rupture and to permit the escape of blood. Blisters are not to be used in the early stages of inflammation, as they cause an increased attraction of blood, but are sometimes useful later for the relief of pain, after symptoms of irritation have disappeared. Diuretics may be used to promote the absorption of the effusion in pericarditis, if the kidneys have been previously ascertained to be in a healthy condition. The failure of one diuretic to increase the secretion of urine should not be regarded as an evidence that this class of remedies is not indicated, as frequently success will follow the use of another. Diaphoretics are, on the other hand, to be sedulously avoided in all inflammatory diseases, as they almost invariably cause an increased action of the heart.

## BOOKS AND PAMPHLETS RECEIVED.

*From the Surgeon-General, U.S.A.*

Catalogue of the Army Medical Museum. 2 vols. 4to.

Circulars Nos. 1, 2, 5, 6, and 7, Surgeon-General's Office.

Report to the Surgeon-General, U.S.A., on Certain Points connected with the Histology of the Minute Blood-Vessels. By Brevet Lieutenant-Colonel J. J. Woodward, Assistant Surgeon, U.S.A. Washington, D.C., 1870. 4to, pp. 8, with 10 photo-micrographs.

Transactions of the Medical Society of the State of Pennsylvania. Sixth Series, Part I. Philadelphia, 1870.

Lunacy, its Past and its Present. By Robert Gardiner Hill, F.S.A. 8vo, pp. 109. London, 1870, Longmans & Co.

Physician's Prescription Record. Philadelphia, S. W. Butler, M.D., 1870.

Notes on Chemical Theories. By B. Howard Rand, M.D., Philadelphia. 8vo, pp. 4.

Bumstead on Venereal Diseases. Third Edition. H. C. Lea, Philadelphia, 1870. 8vo, pp. 704.

## GLEANINGS FROM OUR EXCHANGES.

CAUSE OF INTERMITTENT FEVERS. (Considérations générales sur l'Étiologie des Fièvres intermittentes. By M. Léon COLIN. *Arch. Gén. de Méd.*, Jan. 1870, p. 5.)—This article, which is abridged from a work just published, by Colin, on intermittent fevers, is devoted to a thorough discussion of the causes which have been assigned to these affections.

He points out that, although marshes furnish the most favorable condition for the development of malarial disease, the immense geographical domain of these fevers shows that the comparatively limited marshy tracts cannot serve as their exclusive cause. Thus, there are many localities, both in tropical and temperate climates, where severe malarial fevers occur without the presence of marshes, merely from the upturning of a virgin or fallow soil. The attempt has been made to explain such cases by asserting the existence of subterranean marshes; but, although these do exercise an undoubted influence, Colin regards them as comparatively inert.

He next considers, at some length, the Palmella theory of Salisbury, of Ohio, and, while not denying the existence of such sporules in the earth examined, or even in the sputa and urine of fever patients, he considers it far from proved that they have anything to do with the production of malarial diseases.

The great majority of authors consider that these fevers are caused by the emanations resulting from the decomposition of vegetable matters. Colin, however, while acknowledging the important part which this decomposition plays, regards as the chief cause of malarial fevers the *vegetative power of the soil when not utilized by culture*. He believes that this febrigenous principle resides in the gases which the upper layers of the soil have been shown to contain in such abundance. This gas is suddenly set free after a long period of accumulation and condensation, when the soil is broken up by the laborer. In some regions the natural porosity of the soil permits its



escape. Instead of the term *marsh miasm*, therefore, he employs that of *telluric miasm* or *intoxication*, as more expressive of the full state of the case.

**CHEMICAL FOOD.**—At a recent meeting of the Académie des Sciences (*Chemical News*, Sept. 30, 1870, from the *Comptes Rendus*, Sept. 12, 1870), M. Rabuteau brought to notice a form of food on which, as he has proved by actual experience, a man may live for months, retaining his health and strength, and without other food. It is in the form of a dry powder, and consists of—powdered cocoa, 1000 grammes; sugar, 500 grammes; and of infusion of coffee, 500 grammes; infusion of tea, 200 grammes; the two infusions having been made as strong as possible, and, before incorporation with the other ingredients, having been evaporated to dryness. When completed, the weight will be about 1600 grammes. Of this 150 grammes are to be taken daily, mixed with boiling water, and, in the opinion of the author, it will be found as agreeable as it is life-supporting.

**POLYURIA IN SOME FORMS OF CHRONIC RENAL DISEASE.** By Dr. J. M. FINNY, in *Trans. of Med. Soc. of Coll. of Phys. of Dublin*, in *Dubl. Quart. Jour.*, No. 98, May, 1870, p. 433.—The author, in the first place, refers to the unsatisfactory nature of the various theories which have been advanced to explain the great increase in the amount of urine frequently noticed in albuminoid and granular degeneration of the kidneys.

He assumes that the medullary portion of the kidney, consisting, as it does, of tubuli uriniferi, both looped and straight, will receive, through the vasa recta, a considerably greater supply of blood, in all instances where the cortical intertubular region is impaired and the Malpighian capillaries obliterated, than in a state of health, or in those morbid states where the disease is principally confined to the epithelial lining of the tubes, as, for example, in acute or chronic desquamative nephritis. He repudiates the theory of the kidney being a mere filter of either solids or fluids, and believes that the water is as much a secretion as the solids, and that it is separated by the epithelial investment of the tubes. Accordingly, so long as the obstruction to the cortical circulation lasts, the blood will flow in a very full stream through the vasa recta, and a rapid and large secretion of watery urine will take place in the cones.

In addition to the obstruction to the circulation in the cortex, further elements favoring the large secretion of watery urine are found in the hydremic state of the blood and the increased *vis a tergo* due to the hypertrophy of the left ventricle of the heart so frequently found in cases of contracted granular kidney.

In the amyloid kidney, polyuria is more easily accounted for; for, besides the compensatory action which the medullary portion of the kidney takes on it, it is probable that, through the Malpighian or other capillaries, a transudation of albuminous fluid takes place, similar to the profuse watery diarrhoea we occasionally observe in the more advanced stages of the disease.

**ATROPHY OF THE NERVE-CELLS OF THE MEDULLA AND THE PONS.**—MM. Duchenne (of Boulogne) and Joffroy (*Archiv. de Phys.*, No. 4, 1870) give a résumé of the pathological anatomy of the nerve-cells that is of more than usual interest. Three diseases, progressive muscular atrophy, labio-glossolaryngeal paralysis, and atrophic infantile paralysis, formerly believed to be muscular, are now proven to be due to one and the same anatomical lesion,—alteration in the nerve-cells, producing their atrophy with a tendency to their utter destruction.

Clinically, these cases can be divided into two classes:—1. where the atrophy of the cells is acute, e.g. atrophic infantile paralysis; 2. where it is chronic, e.g. progressive muscular paralysis of the adult. In the first the paralysis attacks suddenly or very rapidly a number of muscles, of which, in time, some recover their functions; but in the second the symptoms, slight at first, become gradually worse, are often stationary for a time, it is true, but do not disappear, and never even retrograde. The second form is often hereditary, the first is not; the second is most frequent in adults, the first in children.

But each of these two forms of disease can be further subdivided, according to the age at which it appears. Acute atrophy of the nerve-cells has (a) a common form seen in

fants,—atrophic infantile paralysis; (b), a much rarer form, seen in adults,—atrophic adult paralysis (see the third edition of Duchenne's "Electrisation Localisée"). Chronic atrophy of the nerve-cells reverses the rule, being very common in the adult, but much more rarely seen in childhood, where it appears only as a hereditary taint. But in this chronic atrophy it is not sufficient to distinguish only the ages at which the disease appears, but also the cases in which alteration attacks the cells of the medulla and pons universally, and those in which it is localized in a particular region. Accordingly, we distinguish the following forms:

(a) The medulla is the first point invaded, when the muscles of the trunk and extremities will be affected; but these troubles, not being fatal, will permit the lesion to extend frequently first to the nuclei of the hypoglossal and facial, and then to those of the spinal accessory and pneumogastric. When the disease attacks the two last-named nuclei, the disease becomes rapidly fatal from respiratory and circulatory troubles.

(b) Not rarely the disease begins in the floor of the fourth ventricle, in the hypoglossal and facial nuclei, the muscular troubles being then in the tongue and lips, and extends, as before, to the spinal accessory and pneumogastric.

(c) In this form the atrophy of the nerve-cells develops itself everywhere at once, but death is produced as before.

Progressive muscular paralysis corresponds generally to the form (a); glosso-labio-laryngeal paralysis, to the form (b); and Charcot's case (*Archiv.*, No. 3, 1870), to the form (c).

In the form (a) the disease generally begins in the cervical enlargement of the cord, and the first symptom is atrophy of the muscles of the thenar eminence, followed by atrophy of other muscles. The muscles waste away, but are never paralyzed.

In the form (b), where the hypoglossal is first affected, the muscles of the tongue are paralyzed without any wasting, and, after all voluntary movement is abolished, galvanization will still act on the muscles. This suggests the idea that there may be motor cells and trophic cells, whose separate destruction may cause these various forms. A detailed case of glosso-labio-laryngeal paralysis, with autopsy and careful microscopic examination, follows.

**SIZE OF THE CHILD IN RELATION TO THE MORTALITY FROM PARTURITION.**—In an elaborate work on the "Proportion which exists between the Size of Children and their Vital Resistance in Normal Parturition," M. Villeneuve (*Pacific Med. and Surg. Journal*) has established the facts that the number of large male children is greater than of female, and that the number of deaths of mothers in childbirth is the more rare in proportion as the children are larger. The explanation, of course, is that the largest children denote the healthiest mothers and those best capable of enduring childbirth and its perils.

**EXPERIMENTAL RESEARCHES ON THE PRODUCTION OF ALBUMINURIA BY INJECTION OF NITROGENIZED SUBSTANCES INTO THE BLOOD.** M. G. CALMETTES (*Arch. de Physiologie Norm. et Path.*, 1870, No. 1, Jan., Feb., p. 26).—As the result of numerous experiments, by injecting solutions of casein, albumen, and gelatin into the blood, the author concludes:

1. That soluble nitrogenous organic substances, introduced into the circulation by injection into the veins, usually tend to escape from the economy by the urinary passages.

2. That their passage through the kidneys causes a temporary irritation of those organs.

3. That the result of this irritation is the temporary presence in the urine of albumen from the animal's blood, and that this albuminuria may persist for some time after the complete elimination of the injected material.

**EXCISION OF THE ULNA.**—Dr. C. S. Muscroft, of Cincinnati (*Cincinnati Lancet and Observer*, August, 1870), reports a case of excision of the entire right ulna, on account of traumatic caries, in a man forty-two years of age, as much as possible of the periosteum being left in the wound, which extended along the inner side of the bone, from one inch above the olecranon process to the same distance below the styloid process. With the exception of the frequent formation of abscesses near the wrist and elbow, the patient made a good recovery, and his condition one year after the operation is thus described: "With the exception of ankylosis of the elbow-joint, the arm

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is nearly as useful as it was previous to the injury which led to the exsection of the ulna, this result being caused by subsequent inflammation of the other bones of the joint, and not by the operation. There is, I think, some reproduction of the ulna, commencing at the elbow-joint and extending about three inches towards the hand. This latter circumstance may also have something to do with the ankylosis present."

In the *Neues Repertorium für Pharmacie*, Bd. xix. Heft 5, Emil Werner shows conclusively that *Ricinin*, the alkaloid discovered by Tuson in the castor-oil bean, is no alkaloid, but a double salt of magnesia and potash, with some organic acid, probably one peculiar to the bean.

In the same journal, MM. Lucian de Koninck and Paul Marquart state that they have found a new nitrogenous neutral substance, bryonicin, in the roots of *Bryonia alba*. It is insoluble in cold water, solutions of lime or ammonia, and dilute mineral acids. Boiling water and strong muriatic acid dissolve it slightly; whilst alcohol, ether, chloroform, and benzole dissolve it readily. With strong sulphuric acid it rapidly produces a solution of a blood-red color.

**OVARIAN TUMORS COMPLICATING LABOR.**—After relating a case in point (*Dublin Quarterly*, May, 1870), Dr. George H. Kidd lays down the following rule in all cases of labor obstructed by tumors in the pelvis. Our first duty is to raise the tumor, if possible, out of the way; and if this cannot be done with the fingers, then we must place the woman on her hands and knees, with her head as low as possible, and introduce into the rectum and dilate with air the largest of Barnes' dilators.

**LAW OF THE RELATIVE AREAS OF THE CARDIAC VALVULAR ORIFICES.**—Dr. Herbert Davies (*Proc. Royal Soc.*, 1870, in *Brit. Med. Jour.*, April 23, 1870) has established a law regulating the relative areas of the cardiac valvular orifices, as deduced from the measurements of Peacock, Reid, and Bizot, in human hearts, and in those of the lower animals from his own. The ratios are as follows:

Area of tricuspid	1.78 sq. inches	1.4 nearly.
Area of mitral	1.27 sq. inches	
Area of pulmonic	1 sq. inch	1.3 nearly.
Area of aortic	.78 sq. inch	

One being known, the other can be calculated. The two ventricles send equal quantities of blood in equal times to unequal distances, overcoming unequal resistances by unequal forces. The size of their four orifices is in direct ratio to the force of the ventricle and the velocity of the stream,—both of these being small on the right side, while the orifices are large, and both being great on the left side, while the orifices are small. The blood passes through the tricuspid orifice at one-quarter of a mile per hour, but through the mitral at one and one-quarter mile per hour.

## MISCELLANY.

THE late Sir James Clark was the President of the British Medical Benevolent Fund. It is perhaps surprising that the profession in this country have never taken much interest in plans of this kind; the only one known to us, in fact, being the "New York Physicians' Mutual Aid Association." We surmise that the reason may be found in the fact that for any such movement more is needed than mere general approval; the earnest efforts of a few men, deeply impressed with the importance of the cause, are essential to bring the matter to a focus of practical operation.

DR. WILLIAM MCCORMAC, Surgeon-in-Chief of the Anglo-American Ambulance Corps at Sedan, is one of the first to report the results of the gunshot wounds and operations of the present war. We need not stop to inquire how much of this ambulance system is "Anglo" and how much is "American;" nor is it necessary to give more than a passing glance at the current of egotism that pervades the whole communication (*Med.*

*Times and Gazette*, Oct. 22, 1870, p. 486). Dr. McC., Dr. Sims, and the medical gentlemen associated with them, had treated 1193 patients, of whom 460 are placed in the report under the head of injuries, and classified as follows:

	Cases.	Deaths.
Gunshot wounds of the head, face, and neck	38	10
" " without penetration, of trunk	29	4
Penetrating wounds of chest	21	10
" " abdomen	3	3
" " pelvis	9	4
" " joints	35	21
Wounds close to and around joints, but not penetrating	25	1
Gunshot wounds causing fractures of bones and limbs	91	35
Gunshot wounds of extremities, without fracture	136	9
" " hand and foot	55	3
Sprains, burns, contusions, etc.	18	1

The surgical operations were of great variety and interest, as will be seen by the following table:

	Cases.	Deaths.
Disarticulation of joints, including 2 hip-joint and 3 knee-joint amputations	11	9
Amputations of limbs, including 14 thighs, 19 legs, and 2 double amputations	77	30
Resections of joints, 1 knee, 2 shoulder, 9 elbow, a double resection shoulder and elbow, and resections of long bones	15	7
Ligature of subclavian	2	2
" common carotid	1	1
" femoral	2	1
" dorsalis pedis	1	0

(All for secondary hemorrhage.)

Dr. McCormac considers the death-rate small, as the cases were of remarkable gravity; and these good results he attributes mainly to open windows and plenty of carbolic acid. About thirty of the deaths were from pyæmia, "which, however, was quite as common, if not more so, in the small houses and châteaux, with only a few patients in each, as it was in our larger establishment."

WE have received the announcement and circular of the Long Island College Hospital for the session of 1871. We were not a little surprised, upon opening the pamphlet, to find placed between the cover and title-page a circular of a quack doctor. It is surely a great piece of impertinence for a vendor of patent medicines to intrude his wares upon the public under cover of the announcement of a regular medical institution; and we would suggest to the gentlemen of the College Hospital the propriety of looking after their enterprising agent.

THE "Brixton baby-farming" case came to a righteous conclusion on the 11th of October, in the hanging of the culprit, Margaret Waters. Readers of the London papers and medical journals are probably familiar with the wretched details of this woman's crimes, elicited during her trial. She confessed to having caused, by neglect and the administration of unsuitable food, the deaths of a number of illegitimate children committed to her charge.

THE *Medical Times and Gazette* quotes a report that, among the war preparations of Russia, a military commission has been appointed at St. Petersburg to create a medical reserve force of one thousand surgeons.

A singular cause of death is mentioned in the same periodical:—"A child at the Newport Market Ragged Schools has been fatally burnt by sitting on a block of wood which had been sprinkled with carbolic acid. The school had been sprinkled with carbolic acid as a disinfectant. The child lived from Tuesday to Friday, and then sank from the severe burns and shock."

M. MILLIOT, a French army surgeon, is reported to have been killed on the field, just as he had succeeded in extracting a ball from a wounded officer.

THE deaths from smallpox in Paris for the week ending September 3 are said to have been 148, in a total mortality of 1159; for the week ending September 10, they were 116, in a total of 981.

We have had no more recent information as to the prevalence of the disease. It is to be hoped that the epidemic has in some degree, at least, subsided, since that unfortunate city was placed in a state of siege.

DR. W. THOMSON has resigned the post of physician to the Episcopal Hospital, in this city. His successor has not yet been elected.

"LIEUTENANT VON LANGENBECK, a son of the eminent surgeon of Berlin, has died of wounds received in battle on the 18th of August. The only son and the son-in-law of General Staff-Surgeon Von Grimm were both killed before Metz, on the 18th. The sons of Dr. Simon, of Berlin, Dr. Stilling, of Cassel, and of several other medical men, have been wounded,—the son of Dr. Laner, Physician-in-Ordinary to the King of Prussia, severely."—(*Boston Med. and Surg. Journal*, Sept. 29, 1870, from *Brit. Med. Journal*.)

ADDITIONAL evidence of the baneful character of many of the articles sold as cosmetics has been developed by some chemical examinations made at the instance of the Metropolitan Board of Health of New York city. The hair-dyes were found to contain either lead in some form, or nitrate of silver: some of the "enamels" were largely composed of lead, and in one "wash" there was detected a quantity of corrosive sublimate. Even the most innocent of all, some white powders for concealing defects in the skin, composed mainly of white clay, would prevent the escape of secretion, and eventually render coarse and injure the surface they were expected to beautify.

THE late Dr. Auzias-Turenne, it is said, gave directions in his will that his body should be dissected, and his skeleton cleaned, articulated, and hung up in the museum of the medical school at Christiania.

MR. HERMANN W. NEWCOMB, a matriculant of the Jefferson Medical College, died in this city on the 2d inst., a victim of too intense devotion to medical studies and scientific investigations.

WE regret to say that a physician of this city is held under two indictments for causing death by producing abortion, and that another (not a member of the regular profession) is charged with the murder of an infant by throwing it into a stream of water.

MORTALITY OF PHILADELPHIA.—The following statements are condensed from the Health Office Reports:

	For the week ending		
	Oct. 22.	Oct. 29.	Nov. 5.
Diseases of the Brain and Nervous System . . . . .	34	43	32
Diseases of the Organs of Circulation and Respiration . . . . .	87	84	76
Diseases of the Abdominal Organs . . . . .	22	12	23
Zymotic Diseases . . . . .	12	16	20
Constitutional Diseases . . . . .	16	5	6
Casualties . . . . .	10	7	13
Stillborn . . . . .	19	14	12
Unclassified . . . . .	33	54	44
Unknown . . . . .	2	0	4
Adults . . . . .	132	122	129
Minors . . . . .	103	113	101
Totals . . . . .	235	235	230

## LIST

### OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE ARMY, TO NOVEMBER 4, 1870.

- SIMONS, JAMES, SURGEON.—By S. O. 283, War Department, A. G. O., Oct. 24, 1870, assigned to duty at *Baltimore*, Md., as attending Surgeon and to examine recruits.
- HAMMOND, J. F., SURGEON.—By S. O. 126, Headquarters Department of Texas, Oct. 5, 1870, relieved at Austin, Texas, and assigned to duty as Post and attending Surgeon at *San Antonio*, Texas.
- ALDEN, C. H., SURGEON.—By S. O. 28, War Department, A. G. O., Oct. 19, 1870, to report in person to the Commanding General, Department of the Lakes, for assignment to duty.
- BACHE, DALLAS, SURGEON.—By S. O. 126, Headquarters Department of Texas, Oct. 5, 1870, assigned to duty at *Fort McKavitt*, Texas, upon being relieved by Surgeon J. F. Hammond at San Antonio, Texas.
- DAVIS, P. C., SURGEON.—By S. O. 187, Headquarters Department of Dakota, Oct. 19, 1870, assigned to duty at *Fort Benton*, Montana Territory, upon being relieved by Assistant Surgeon A. B. Campbell, at Fort Ellis, M. T.
- BROOKE, JOHN, ASSISTANT SURGEON.—By S. O. 201, Headquarters Department of the East, Oct. 11, 1870, assigned to duty at *Raleigh*, N. C., as Post Surgeon, after proper disposition of medical and hospital property at Fort Delaware, Del.
- BROOKE, JOHN, ASSISTANT SURGEON.—By S. O. 208, Headquarters Department of the East, Oct. 22, 1870, granted permission to *delay five days* in complying with par. 6, S. O. 201, c. s., from these Headquarters, after completing disposition of medical and hospital property at Fort Delaware, Del.
- SMART, CHARLES, ASSISTANT SURGEON.—By S. O. 208, Headquarters Department of the East, Oct. 22, 1870, to report to the commanding officer and to the Post Surgeon at *Fort Monroe*, Va., for duty.
- GIRARD, A. C., ASSISTANT SURGEON.—By S. O. 126, Headquarters Department of Texas, Oct. 1, 1870, relieved at Fort McKavitt, Texas, and assigned to duty as Post Surgeon at *Fort Duncan*, Texas.
- GUNN, G. H., ASSISTANT SURGEON.—By S. O. 133, Headquarters Department of Texas, Oct. 15, 1870, assigned to duty at *Fort Quitman*, Texas, upon completion of duty assigned him in par. 6, S. O. 114, c. s. from these Headquarters.
- CAMPBELL, A. B., ASSISTANT SURGEON.—By par. 1, S. O. 187, Headquarters Department of Dakota, Oct. 19, 1870, assigned to duty at *Fort Ellis*, M. T., upon being relieved at Fort Benton, M. T., by A. A. Surgeon Marselis.
- KING, W. H., ASSISTANT SURGEON.—By S. O. 59, Headquarters Cavalry Detachment Camp, near River Bend, Colorado Territory, Oct. 10, 1870, relieved from duty with this command, and to proceed to *Fort Wallace*, Kansas, in compliance with telegraphic instructions received from Headquarters Troops in the Field.
- KING, W. H., ASSISTANT SURGEON.—By S. O. 201, par. 1, Headquarters Department of the Missouri, Oct. 26, 1870, assigned to duty as Post Surgeon at *Fort Wallace*, Kansas.
- COWDREY, S. G., ASSISTANT SURGEON.—By S. O. 200, par. 2, Headquarters Department of the Missouri, Oct. 25, 1870, to accompany the detachment of the Seventh Cavalry ordered from Fort Hayes to Fort Leavenworth, Kansas.
- COWDREY, S. G., ASSISTANT SURGEON.—By S. O. 79, Headquarters Detachment Seventh Cavalry, Camp Sturges, Kansas, Oct. 24, 1870, to proceed without delay to *Fort Leavenworth*, Kansas. Upon arriving at Fort Leavenworth, he will report for duty to the commanding officer of that post.
- COWDREY, S. G., ASSISTANT SURGEON.—By S. O. 202, Headquarters Department of the Missouri, Oct. 27, 1870, leave of absence for *thirty days* is granted.
- ALDEN, C. H., SURGEON.—By S. O. 118, Headquarters Department of the Lakes, Oct. 27, 1870, will proceed to *Fort Mackinac*, Michigan, and report to the commanding officer of that post for duty.
- LIPPINCOTT, HENRY, ASSISTANT SURGEON.—By S. O. 196, Headquarters Department of the Missouri, Fort Leavenworth. Oct. 17, 1870, will accompany a detachment of the Seventh Cavalry ordered from Fort Hayes to *Fort Leavenworth* by par. 1, S. O. 192, c. s. from these Headquarters.
- DELANEY, ALFRED, ASSISTANT SURGEON.—By S. O. 190, Headquarters Department of the Missouri, October 10, 1870, is granted leave of absence for *thirty days* on surgeon's certificate.
- WIRTZ, H. R., SURGEON.—By S. O. 25, Headquarters Department of Arizona, Oct. 13, 1870, will proceed to *Drum Barracks*, California, and await further orders from these Headquarters.
- ALDEN, C. H., SURGEON.—By S. O. 120, Headquarters Department of the Lakes, Oct. 31, 1870, will repair to *Fort Gratiot*, Michigan, and relieve Assistant Surgeon S. S. Jessop, U. S. A., from duty at that post. Assistant Surgeon S. S. Jessop, upon being relieved, will repair to *Fort Mackinac*, and relieve Acting Assistant Surgeon H. R. Mills, U. S. A.

TREATMENT OF POST-PARTUM AND SECONDARY HEMORRHAGE.—Dr. Hall Davis (*British Med. Journal*, May 7) reports three successful cases with the following treatment. After all other measures had failed, he cleared out the clots, and injected into the uterus a solution of the perchloride of iron,—one part to four of water. In one case, which had hemorrhaged twelve days after delivery, the os uteri was dilated with sponge tents and Barnes' dilators before the injection was used. He has found the persulphate of iron of equal efficacy.